

Curriculum vitæ

of

Massimo Giovannozzi

Education

July 1984: Graduation from High school (Diploma di maturità scientifica)
March 1989: Master degree (Laurea) with a thesis on non-linear dynamics applied to accelerator physics
December 1991 - November 1993: Doctorate student at CERN
September 1993: PhD degree in Mathematical Physics at the university of Bologna

Career

June 1994 - September 1996: Fellow at CERN
April 1997 - present: Staff physicist in the CERN accelerator physics group of the PS division
January 2001 - December 2002: Scientific secretary of the “PS Performance Committee”
January 2003 - January 2004: Scientific secretary of the “Accelerator Performance Committee”
January 2003 - present: Member of the LHC “Magnet Evaluation Board”
April 2003 - January 2007: Member of the LHC “Field Quality Working Group”
July 2003 - October 2006: Chairman of the “Study Group on the New PS Multi-Turn Extraction”
January 2004 - June 2009: Scientific secretary of the LHC “Magnet Evaluation Board”
July 2005 - December 2006: Leader of the LHC Optics and Commissioning Section
October 2006 - present: Leader of the PS Multi-Turn Extraction Project
January 2007 - December 2013: Leader of the LHC Upgrade and Commissioning section
July 2007 - present: Senior staff physicist in the CERN accelerator physics group
January 2008 - December 2008: LHC System Commissioner
January 2011 - present: Leader of the Task 2.3 - Single particle simulations - of the HiLumi LHC Work Package 2 - Accelerator Physics and Performance
January 2012 - present: Member of the American Physical Society, Division of Physics of Beams
January 2013 - January 2016: Leader of the Task 2.2 - Optics and layout - of the HiLumi LHC Work Package 2 - Accelerator Physics and Performance
January 2014 - present: Leader of the Hadron Synchrotrons Single-particle effects section of the CERN Accelerators and Beam Physics Group
September 2014 - December 2017: LHC Machine Co-ordinator
January 2017 - present: Co-chair of HL-LHC Working Group on Alignment
March 2020 - present: Visiting Professor at Bologna University teaching accelerator physics

International tasks

January 2005: Member of the International Advisory Committee of the Workshop “Coulomb05”
January 2009: Member of the International Advisory Committee of the Workshop “Coulomb09”
June 2011: Co-organizer of the “Optics Measurements, Corrections and Modelling for High-Performance Storage Rings” workshop
June 2013: Co-organizer of the “LHC Optics Measurement and Corrections Review”
November 2014: Member of the Chinese SNS Accelerator Technical Advisory Committee
February 2015: Co-organizer of the “Advanced Optics Control” workshop
June 2015: Member of the review panel of the “Future Circular Collider tunnel footprint and implantation”
January 2016: Member of the International Advisory Committee of the EuCARD-2 XRING, and HIC for FAIR workshop “The Slow Extraction Workshop”

List of publications by Massimo Giovannozzi

Thesis

1. M. Giovannozzi (1989). “Analisi di stabilità per mappe hamiltoniane e loro applicazioni alla fisica degli acceleratori”, tesi di Laurea Università di Bologna.
2. M. Giovannozzi (1993). “Aspetti di dinamica non lineare con applicazioni in dinamica dei fasci”, tesi di Dottorato Università di Bologna, *CERN THESIS 99-068*.

Books and proceedings

1. M. Giovannozzi and G. Turchetti (Eds.) (2006). “Workshop on High Intensity Beam Dynamics - Coulomb’05”, Nucl. Instrum. Methods Phys. Res. A, 561.
2. M. Giovannozzi (Ed.) *et al.* (2006). “The CERN PS multi-turn extraction based on beam splitting in stable islands of transverse phase space: Design Report”, CERN-2006-011.
3. G. Turchetti, V. Malka, and M. Giovannozzi (Eds.) (2010). “Workshop on Ions Acceleration with high Power Lasers: Physics and Applications - Coulomb’09”, Nucl. Instrum. Methods Phys. Res. A, 620.
4. S. Gilardoni (Ed.), D. Manglunki (Ed.) *et al.* (2011). “Fifty years of the CERN Proton Synchrotron : Volume 1”, CERN-2011-004.
5. S. Gilardoni (Ed.), D. Manglunki (Ed.) *et al.* (2013). “Fifty years of the CERN Proton Synchrotron : Volume 2”, CERN-2013-005.
6. M. Giovannozzi (2011). “The LHC machine: from beam commissioning to operation and future upgrades”, in *Theoretical Physics to Face the Challenge of LHC* Lecture Notes of the Les Houches Summer School: Volume 97, August 2011, Oxford University Press.
7. D. Angal-Kalinin *et al.*, in “High-Luminosity Large Hadron Collider (HL-LHC). Preliminary Design Report”, ed. by G. Apollinari, I. Béjar Alonso, O. Brüning, M. Lamont, L. Rossi, CERN-2015-005 (CERN, Geneva, 2015), 21-60, DOI: <http://dx.doi.org/10.5170/CERN-2015-005.21>.
8. K. Brown, M. Giovannozzi, T. Roser, in “Challenges and Goals for Accelerators in the XXI Century”, ed. by O. Brüning and S. Myers (World Scientific Publishing, Singapore, 2016).
9. M. Giovannozzi and C. Steinbach, in “Technology meets research”, ed. by C. Fabjan, T. Taylor, D. Treille and H. Wenninger (World Scientific Publishing, Singapore, 2017).
10. M. Giovannozzi *et al.*, in “High-Luminosity Large Hadron Collider (HL-LHC). Technical Design Report V.0.1”, edited by Apollinari G, Bejar Alonso I., Bruning O., Fessia P., Lamont M, Rossi L., Taviani L., CERN Yellow Reports: Monographs, Vol.4/2017, CERN-2017-007-M (CERN, Geneva, 2017). <https://doi.org/10.23731/CYRM-2017-004>.

International Journals

1. M. Giovannozzi and S. Marmi (1990). “Existence of complex invariant circles in the quadratic area-preserving map”, *Rendiconti di Matematica* **9** 457.
2. A. Bazzani, M. Giovannozzi, G. Servizi, E. Todesco and G. Turchetti (1993). “Resonant normal forms, interpolating hamiltonians and stability analysis of area preserving maps”, *Physica D* **64** 66.
3. M. Giovannozzi (1993). “Analysis of the Stability Domain for the Hénon Map”, *Phys. Lett. A* **182** 255.
4. A. Bazzani, M. Giovannozzi and E. Todesco (1995). “A program to compute Birkhoff normal forms of a symplectic map in \mathbf{R}^4 ”, *Comp. Phys. Comm.* **86** 199.
5. D. Bortolotti, M. Giovannozzi, G. Servizi, E. Todesco and M. N. Vrahatis (1995). “GIOTTO: a Code for the Nonlinear Analysis of Area-Preserving Mappings”, *Int. J. of Mod. Phys. C* **6** 651.
6. M. Giovannozzi, R. Grassi, W. Scandale and E. Todesco (1995). “A Sorting Approach to the magnetic random errors”, *Phys. Rev. E* **52** 3093.
7. R. Bartolini, A. Bazzani, M. Giovannozzi, W. Scandale and E. Todesco (1995). “Tune evaluation in simulations and experiment”, *Part. Accel.* **52** 147.
8. M. Giovannozzi and E. Todesco (1996). “Dynamic aperture estimates and phase space distortions in nonlinear betatronic motion”, *Phys. Rev. E* **53** 4067.
9. M. Giovannozzi (1996). “Stability domain of planar symplectic maps using invariant manifolds”, *Phys. Rev. E* **53** 6403.
10. M. Giovannozzi, W. Scandale, E. Todesco (1996). “Inverse Logarithmic Extrapolation of Survival Plots in Hadron Colliders”, *Beam Dyn. Newsl.* **12** 6.
11. M. Giovannozzi, W. Scandale, E. Todesco (1996). “Prediction of long-term stability in large hadron colliders”, *Part. Accel.* **56** 195.
12. W. Fischer, M. Giovannozzi and F. Schmidt (1997). “Dynamic aperture experiment at a synchrotron”, *Phys. Rev. E* **55** 3507.
13. M. Giovannozzi and E. McIntosh (1997). “Development of parallel codes for the study of nonlinear beam dynamics”, *Int. Jou. Mod. Phys. C* **8** 155.
14. M. Giovannozzi, E. Todesco, A. Bazzani and R. Bartolini (1997). “PLATO: a program library for the analysis of nonlinear betatronic motion”, *Nucl. Instrum. & Methods A* **388** 1.
15. E. Todesco, M. Gemmi and M. Giovannozzi (1997). “NERO: a code for the Nonlinear Evaluation of Resonances in One-turn mapping”, *Comp. Phys. Comm.* **106** 169.
16. M. Giovannozzi (1997). “Stability domain and invariant manifolds of 2D area-preserving diffeomorphisms” *Cel. Mech.* **68** 177.
17. M. Giovannozzi, W. Scandale and E. Todesco (1998). “Dynamic aperture extrapolation in presence of tune modulation”, *Phys. Rev. E* **57** 3432.
18. R. Bartolini, M. Giovannozzi, W. Scandale, E. Todesco (1998). “Sorting strategies for non-local compensation of non-linear errors in large hadron colliders”, *Nuovo Cimento* **113 B** 511.
19. R. Cappi, M. Chanel, R. Garoby, M. Giovannozzi, E. Métral, G. Métral (1999). “Beam dynamics Activities at the CERN PSB-PS”, *Beam Dyn. Newsl.* **20** 39.
20. G. Arduini, M. Giovannozzi, K. Hanke, D. Manglunki, M. Martini, (2001). “New Methods to Derive the Optical and Beam Parameters in Transport Channels”, *Nucl. Instrum. & Methods A* **459** 16.
21. R. Cappi, M. Giovannozzi (2001). “Studies of multi-turn extraction at CERN-PS via particle-trapping in islands of phase space”, *Beam Dyn. Newsl.* **25** 13.
22. R. Cappi, M. Giovannozzi (2002). “Novel Method for Multi-Turn Extraction: Trapping Charged Particles in Islands of Phase Space”, *Phys. Rev. Lett.* **88** 104801.
23. R. Cappi, M. Giovannozzi, E. Métral, G. Métral, G. Rumolo, F. Zimmermann (2002). “Electron cloud buildup and related instability in the CERN Proton Synchrotron”, *Phys. Rev. ST Accel. Beams* **5** 094401.

24. M. Giovannozzi, E. Métral, G. Métral, G. Rumolo, F. Zimmermann (2003). “Electron cloud buildup and instability: Numerical simulations for the CERN Proton Synchrotron”, *Phys. Rev. ST Accel. Beams* **6** 010101.
25. G. Franchetti, I. Hofmann, M. Giovannozzi, E. Métral, M. Martini (2003). “Space charge and octupole driven resonance trapping observed at the CERN Proton Synchrotron”, *Phys. Rev. ST Accel. Beams* **6** 124201.
26. R. Cappi, M. Giovannozzi (2003). “Multi-turn Extraction and Injection by Means of Adiabatic Capture in Stable Islands of Phase Space”, *Phys. Rev. ST Accel. Beams* **7** 024001.
27. M. Giovannozzi (2005). “Recent Advances on the Multi-Turn Extraction Using Stable Islands of Transverse Phase Space”, *Beam Dyn. Newsl.* **36** 43.
28. S. Gilardoni, M. Giovannozzi, M. Martini, E. Métral, P. Scaramuzzi, R. Steerenberg, A.-S. Müller, (2006). “Experimental evidence of adiabatic splitting of charged particle beams using stable islands of transverse phase space”, *Phys. Rev. ST Accel. Beams* **9** 104001.
29. M. Giovannozzi and J. Morel (2007). “Principle and analysis of multiturn injection using stable islands of transverse phase space”, *Phys. Rev. ST Accel. Beams* **10** 034001.
30. R. Tomás, M. Giovannozzi, and R. de Maria (2009). “Nonlinear correction schemes for the phase 1 LHC insertion region upgrade and dynamic aperture studies”, *Phys. Rev. ST Accel. Beams* **12** 011002.
31. A. Franchi, S. Gilardoni, M. Giovannozzi (2009). “Progresses in the studies of adiabatic splitting of charged particle beams by crossing nonlinear resonances”, *Phys. Rev. ST Accel. Beams* **12** 014001.
32. M. Giovannozzi, D. Quatraro, G. Turchetti (2009). “Generating unstable resonances for extraction schemes based on transverse splitting”, *Phys. Rev. ST Accel. Beams* **12** 024003.
33. M. Aiba, S. Fartoukh, A. Franchi, M. Giovannozzi, V. Kain, M. Lamont, R. Tomás, G. Vanbavinckhove, J. Wenninger, F. Zimmermann, R. Calaga, and A. Morita (2009). “First β -beating measurement and optics analysis for the CERN Large Hadron Collider”, *Phys. Rev. ST Accel. Beams* **12** 081002.
34. R. Tomás, O. Brüning, M. Giovannozzi, P. Hagen, M. Lamont, F. Schmidt, G. Vanbavinckhove, M. Aiba, R. Calaga and R. Miyamoto (2010). “CERN Large Hadron Collider optics model, measurements, and corrections”, *Phys. Rev. ST Accel. Beams* **13** 121004.
35. S. Fartoukh, M. Giovannozzi (2012). “Dynamic aperture computation for the as-built CERN Large Hadron Collider and impact of main dipoles sorting”, *Nucl. Instrum. & Methods A* **671** 10.
36. M. Giovannozzi (2012). “A proposed scaling law for intensity evolution in hadron storage rings based on dynamic aperture variation with time”, *Phys. Rev. ST Accel. Beams* **15** 024001.
37. T. Adam et al. (2012). “Measurement of the neutrino velocity with the OPERA detector in the CNGS beam”, *J. High Energy Phys.* **1210** 093.
38. S. Gilardoni, M. Giovannozzi, and C. Hernalsteens (2013). “First observations of intensity-dependent effects for transversely split beams during multiturn extraction studies at the CERN Proton Synchrotron”, *Phys. Rev. ST Accel. Beams* **16** 051001.
39. A. Bazzani, C. Frye, M. Giovannozzi, and C. Hernalsteens (2014). “Analysis of adiabatic trapping for quasi-integrable area-preserving maps”, *Phys. Rev. E* **89**, 042915.
40. A. Bazzani, M. Giovannozzi, P. Londrillo, S. Sinigardi, G. Turchetti (2014). “Case studies in space charge and plasma acceleration of charged beams”, *Comptes Rendus Mécanique* **342** 647.
41. A. Franchi and M. Giovannozzi (2015). “Novel technique for injecting and extracting beams in a circular hadron accelerator without using septum magnets”, *Phys. Rev. ST Accel. Beams* **18**, 074001.
42. N. Aquilina, M. Giovannozzi, M. Lamont, N. Sammut, R. Steinhagen, E. Todesco, J. Wenninger (2015). “Tune variations in the Large Hadron Collider”, *Nucl. Instrum. Methods Phys. Res., A* **778** 6.
43. E. H. Maclean, R. Tomás, M. Giovannozzi, and T. H. B. Persson (2015). “First measurement and correction of nonlinear errors in the experimental insertions of the CERN Large Hadron Collider”, *Phys. Rev. ST Accel. Beams* **18** 121002 .

44. J. Borburgh, S. Damjanovic, S. Gilardoni, M. Giovannozzi, C. Hernalsteens, M. Hourican, A. Huschauer, K. Kahle, G. Le Godec, O. Michels and G. Sterbini (2016). “First implementation of transversely split proton beams in the CERN Proton Synchrotron for the fixed-target physics programme”, *EPL* **113** 34001.
45. S. Abernethy, A. Akroh, H. Bartosik, A. Blas, T. Bohl, S. Cettour-Cave, K. Cornelis, H. Damerau, S. Gilardoni, M. Giovannozzi, C. Hernalsteens, A. Huschauer, V. Kain, D. Manglunki, G. Métral, B. Mikulec, B. Salvant, J.-L. Sanchez Alvarez, R. Steerenberg, G. Sterbini, and Y. Wu (2017). “Operational performance of the CERN injector complex with transversely split beams”, *Phys. Rev. Accel. Beams* **20**, 014001.
46. R. Bruce, C. Bracco, R. De Maria, M. Giovannozzi, A. Mereghetti, D. Mirarchi, S. Redaelli, E. Quaranta, B. Salvachua (2017). “Reaching record-low β^* at the CERN Large Hadron Collider using a novel scheme of collimator settings and optics”, *Nucl. Instrum. & Methods A* **848** 19.
47. A. Huschauer, A. Blas, J. Borburgh, S. Damjanovic, S. Gilardoni, M. Giovannozzi, M. Hourican, K. Kahle, G. Le Godec, O. Michels, G. Sterbini, and C. Hernalsteens (2017). “Transverse beam splitting made operational: Key features of the multiturn extraction at the CERN Proton Synchrotron”, *Phys. Rev. Accel. Beams* **20**, 061001.
48. S. Machida, C. Prior, S. Gilardoni, M. Giovannozzi, A. Huschauer, and S. Hirlander (2017). “Numerical investigation of space charge effects on the positions of beamlets for transversely split beams”, *Phys. Rev. Accel. Beams* **20**, 121001.
49. J. Barranco, Y. Cai, D. Cameron, M. Crouch, R. De Maria, L. Field, M. Giovannozzi, P. Hermes, N. Høimyr, D. Kaltchev, N. Karastathis, C. Luzzi, E. Maclean, E. McIntosh, A. Mereghetti, J. Molson, Y. Nosochkov, T. Pieloni, I. D. Reid, L. Rivkin, B. Segal, K. Sjobak, P. Skands, C. Tambasco, F. Van der Veken, and I. Zacharov (2017). “LHC@Home: a BOINC-based volunteer computing infrastructure for physics studies at CERN”, *Open Eng.* **7**, 378.
50. Y. Cai, Y. Nosochkov, M. Giovannozzi, T. Risselada, E. Todesco, D. Zhou, F. Zimmermann (2017). “HE-LHC Optics Development”, *ICFA Beam Dyn. Newsl.* **72** 141.
51. M. Giovannozzi, F. Van der Veken (2018). “Description of the luminosity evolution for the CERN LHC including dynamic aperture effects, Part I: The model”, *Nucl. Instrum. & Methods A* **905**, 171.
52. M. Giovannozzi, F. Van der Veken (2018). “Description of the luminosity evolution for the CERN LHC including dynamic aperture effects. Part II: application to Run 1 data”, *Nucl. Instrum. & Methods A* **908**, 1.
53. A. Abada *et al.* (2019). “Future Circular Collider: Conceptual Design Report Vol. 1 Physics Opportunities”, *Eur. Phys. J. C* **79**, 474.
54. A. Abada *et al.*. “FCC-ee: The Lepton Collider ? Future Circular Collider Conceptual Design Report Volume 2”, *Eur. Phys. J. Special Topics* **228**, 261.
55. M. Benedikt *et al.* (2018). “Future Circular Collider: Conceptual Design Report Vol. 3 The Hadron Collider (FCC-hh)”, *Eur. Phys. J. Special Topics* **228**, 755.
56. F. Zimmermann *et al.* (2018). “Future Circular Collider: Conceptual Design Report Vol. 4 The High-Energy LHC (HE-LHC)”, *Eur. Phys. J. Special Topics* **228**, 755.
57. E.H. Maclean, M. Giovannozzi, and R.B. Appleby (2019). “Innovative method to measure the extent of the stable phase-space region of proton synchrotrons”, *Phys. Rev. Accel. Beams* **22**, 034002.
58. M. Giovannozzi, F. Van der Veken (2019). “Erratum to “Description of the luminosity evolution for the CERN LHC including dynamic aperture effects. Part I: The model” [Nucl. Instrum. Methods A 905 (2018) 171–179]”, *Nucl. Instrum. & Methods A* **927**, 471.
59. A. Alexopoulos *et al.* (The BGV Collaboration) (2019). “Noninvasive LHC transverse beam size measurement using inelastic beam-gas interactions”, *Phys. Rev. Accel. Beams* **22**, 042801.
60. E.H. Maclean *et al.* (2019). “New approach to LHC optics commissioning for the nonlinear era”, *Phys. Rev. Accel. Beams* **22**, 061004.
61. A. Huschauer *et al.* (2019). “Advancing the CERN proton synchrotron multiturn extraction towards the high-intensity proton beams frontier”, *Phys. Rev. Accel. Beams* **22**, 104002.

62. A. Bazzani, M. Giovannozzi, E.H. Maclean, C.E. Montanari, F.F. Van der Veken, and W. Van Goethem (2019). “Advances on the modeling of the time evolution of dynamic aperture of hadron circular accelerators”, *Phys. Rev. Accel. Beams* **22**, 104003.
63. M. Vadai, A. Alomainy, H. Damerou, S. Gilardoni, M. Giovannozzi and A. Huschauer (2019). “Barrier bucket and transversely split beams for loss-free multi-turn extraction in synchrotrons”, *EPL* **128** 14002.
64. A. Bazzani, M. Giovannozzi, E.H. Maclean (2020). “Analysis of the non-linear beam dynamics at top energy for the CERN Large Hadron Collider by means of a diffusion model”, *Eur. Phys. J. Plus* **135**, 77.
65. X. Cui, S. Gilardoni, M. Giovannozzi and G. Iadarola (2020). “Numerical simulations of electron cloud build-up in circular accelerators in the presence of multimode distribution beams”, *EPL* **129** 24003

Conference proceedings published in international journals

1. M. Giovannozzi and E. Todesco (1996). “Numerical methods to estimate the dynamic aperture”, *Part. Accel.* **54** 203.
2. R. Bartolini, A. Bazzani, M. Giovannozzi, W. Scandale and E. Todesco (1995). “Precise measurement of the betatron tune”, *Part. Accel.* **55** 247.
3. E. Todesco, M. Giovannozzi and W. Scandale (1995). “Fast indicators of long-term stability”, *Part. Accel.* **55** 273.
4. E. Todesco, M. Gemmi and M. Giovannozzi (1998). “Evaluation of nonlinear resonances in 4D symplectic mappings”, *Mathematics and Computers in Simulation* **45** 485.
5. M. Giovannozzi, J-Y. Hémerly, C. Metzger, U. Mikkelsen, (1999). “Experimental Area of the CERN Antiproton Decelerator”, *Nucl. Phys. A* **655** 339.
6. H. Haseroth for the CERN Neutrino Factory Working Group at CERN (2001). “CERN Ideas and Plans for a Neutrino Factory”, *Nucl. Instrum. & Methods A* **472** 376.
7. H. Schönauer *et al.* (2001). “Proton Drivers for Neutrino Factories: the CERN Approach”, *Nucl. Instrum. & Methods A* **472** 504.
8. R. Garoby for the CERN neutrino factory working group (2003). “Status of European studies for a Neutrino Factory at CERN”, *Nucl. Instrum. & Methods A* **503** 26.
9. R. Cappi, M. Giovannozzi (2004). “Multiturn Extraction: Performance Analysis of Old and New Approaches”, *Nucl. Instrum. & Methods A* **519** 442.
10. S. Gilardoni, M. Giovannozzi, M. Martini, E. Métral, P. Scaramuzzi, R. Steerenberg, A.-S. Müller (2006). “Resonant multi-turn extraction: Principle and experiments”, *Nucl. Instrum. & Methods A* **561** 247.
11. E. Métral, G. Franchetti, M. Giovannozzi, I. Hofmann, M. Martini, R. Steerenberg (2006). “Observation of octupole driven resonance phenomena with space charge at the CERN Proton Synchrotron”, *Nucl. Instrum. & Methods A* **561** 257.
12. N. Høimyr *et al.* (2012). “BOINC service for volunteer cloud computing”, *J. Phys.: Conf. Ser.* **396** 032057.
13. F. Savary *et al.* (2015). “Status of the 11 T Nb₃Sn dipole project for the LHC”, *IEEE Trans. Appl. Supercond.* **25** 4003205.
14. F. Savary *et al.* (2016). “The 11 T Dipole for HL-LHC: Status and Plan”, *IEEE Trans. Appl. Supercond.* **26** 4005305.
15. E. Todesco *et al.* (2016). “The magnetic model of the LHC at 6.5 TeV”, *IEEE Trans. Appl. Supercond.* **26** 4005707.
16. G. Arduini *et al.* (2016). “High Luminosity LHC: challenges and plans”, *J. Inst.* **11** 12081.
17. A. Huschauer, M. Giovannozzi, O. Michels, A. Nicoletti, G. Sterbini (2017). “Analysis of performance fluctuations for the CERN Proton Synchrotron multi-turn extraction”, *J. Phys.: Conf. Ser.* **874** 012072.
18. A. Alexopoulos *et al.* (2017). “First LHC transverse beam size measurements with the beam gas vertex detector”, *J. Phys.: Conf. Ser.* **874** 012086.
19. L. Fiscarelli *et al.* (2018). “Field Quality of MBH 11-T Dipoles for HL-LHC and Impact on Beam Dynamic Aperture”, *IEEE Trans. Appl. Supercond.* **28** 4004005.
20. F. Zimmermann *et al.* (2018). “High-Energy LHC Design”, *J. Phys.: Conf. Ser.* **1067** 022009.
21. R. De Maria, R. Bruce, D. Gamba, M. Giovannozzi and F. Plassard (2019). “High Luminosity LHC Optics and Layout HLLHCv1.4”, *J. Phys.: Conf. Ser.* **1350** 012001.
22. C. Boscolo Meneguolo *et al.* (2019). “Study of Beam-Gas Interactions at the LHC for the Physics Beyond Colliders Fixed-Target Study”, *J. Phys.: Conf. Ser.* **1350** 012010.
23. M. Vaday *et al.* (2019). “Beam manipulations with barrier buckets in the CERN PS”, *J. Phys.: Conf. Ser.* **1350** 012088.
24. R. De Maria *et al.* (2019). “SixTrack Version 5: Status and New Developments”, *J. Phys.: Conf. Ser.* **1350** 012129.
25. R. De Maria *et al.* (2019). “SixTrack V and runtime environment”, *Int. J. Mod. Phys. A* **34** 1942035.

Conference Proceedings

1. A. Bazzani, M. Giovannozzi, G. Servizi, E. Todesco, G. Turchetti, (1989). “Normal Forms for symplectic maps and stability of beams in particle accelerators”, in *Elettrodinamica e fenomeni non lineari*, ed. by G. Maino *et al.*, World Scientific, Singapore, 203.
2. M. Giovannozzi and F. Schmidt (1991). “The 1991 Dynamic Aperture Experiment at the CERN SPS”, AIP Conf. Proc. 255, Particle and Fields, 355.
3. A. Bazzani, M. Giovannozzi, G. Servizi, E. Todesco, G. Turchetti, (1992). “Computation of the dynamic aperture of a one dimensional model of a sextupole nonlinearity, using analytical tools”, in *Third European Particle Accelerator Conference*, ed. by H. Henke *et al.*, Edition Frontières, Gif sur Yvette, 945.
4. M. Giovannozzi (1993). “Invariant Manifolds and Stability: some Results for 1–D Maps”, AIP Conf. Proc. 292, Particle and Fields, 385.
5. M. Giovannozzi and F. Schmidt (1993). “General Normal Form Procedure to Correct Tune–Shift and Non–Linear Chromaticity for Large Accelerators like the LHC”, in *1993 Particle Accelerator Conference*, ed. by C. W. Leemann *et al.*, IEEE Service Center, Piscataway, 500.
6. W. Fischer, J. Gareyte, M. Giovannozzi, T. Risselada, W. Scandale, F. Schmidt (1993). “Recent Results from the Dynamic Aperture Experiment at the SPS”, in *1993 Particle Accelerator Conference*, ed. by C. W. Leemann *et al.*, IEEE Service Center, Piscataway, 246.
7. A. Bazzani, M. Giovannozzi, S. Rambaldi, G. Turchetti (1993). “Diffusion Phenomena in Simple Hamiltonian Systems: Some Analytical and Numerical Results”, in *1993 Particle Accelerator Conference*, ed. by C. W. Leemann *et al.*, IEEE Service Center, Piscataway, 273.
8. A. Bazzani, D. Bortolotti, M. Giovannozzi, G. Servizi, E. Todesco e G. Turchetti (1994). “GIOTTO: an interactive program for the analysis of 2D area preserving mappings”, in *Fourth European Particle Accelerator Conference*, ed. by V. Suller *et al.*, Edition Frontières, Gif sur Yvette, 923.
9. W. Fischer, M. Giovannozzi and F. Schmidt (1994). “Detailed Comparison of Experimental Observations and Computer Tracking in the SPS Dynamic Aperture Experiment”, in *Fourth European Particle Accelerator Conference*, ed. by V. Suller *et al.*, Edition Frontières, Gif sur Yvette, 950.
10. A. Bazzani, M. Giovannozzi and G. Turchetti (1995). “Stochastic perturbation of the linear tune and diffusion for simple lattice models”, AIP Conf. Proc. 344, 78.
11. M. Giovannozzi, R. Grassi, W. Scandale and E. Todesco (1995). “Analysis of quality factors in the sorting problem”, AIP Conf. Proc. 344, 215.
12. M. Giovannozzi, R. Grassi, W. Scandale and E. Todesco (1995). “Sorting Strategies for the LHC based on Normal Forms”, in *1995 Particle Accelerator Conference*, IEEE Service Center, Piscataway, 2847.
13. E. Todesco, A. Faus-Golfe, M. Giovannozzi and W. Scandale (1996). “Early indicators of long term stability in hadron colliders”, in *Fifth European Particle Accelerator Conference*, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 313.
14. R. Bartolini, M. Giovannozzi, W. Scandale, A. Verdier, E. Todesco, J. Corbett, M. Cornacchia, P. Tran (1996). “Measurement of the tune variations induced by non-linearities in lepton machines”, in *Fifth European Particle Accelerator Conference*, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 917.
15. R. Bartolini, M. Giovannozzi, W. Scandale, E. Todesco (1996). “Proposal of a sorting experiment at the CERN SPS”, in *Fifth European Particle Accelerator Conference*, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1326.
16. R. Bartolini, M. Giovannozzi, W. Scandale, A. Bazzani, E. Todesco (1996). “Algorithms for a precise determination of the betatron tune”, in *Fifth European Particle Accelerator Conference*, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1329.
17. E. Todesco, M. Giovannozzi, W. Scandale (1996). “Evaluation of Dynamic Aperture in the Presence of Phase Space Distortions”, in *Fifth European Particle Accelerator Conference*, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 977.

18. J. P. Riunaud *et al.* (1997). “An Antiproton Decelerator in the CERN PS Complex”, in Proceedings della 28th International Conference on High-Energy Physics - ICHEP 96, ed. by Z. Ajduk and A. K. Wróblewski World Sci., Singapore, 1749.
19. M. Giovannozzi, W. Scandale and E. Todesco (1997). “Prediction of long-term stability in hadron accelerators”, in Proceedings della Conferenza Nonlinear Problems in Particle Accelerators: theory and experiments, ed. by M. Cornacchia and C. Pellegrini, AIP New York, 243.
20. M. Giovannozzi (1997). “Evaluation of the dynamic aperture of the CERN-LHC using fast indicators of long term stability”, in Proceedings della Conferenza Supercomputation in Nonlinear and Disordered systems: Algorithms, Applications and Architectures, ed. by L. Vázquez, F. Tirado and I. Martín, World Scientific Singapore, 213.
21. M. Giovannozzi, E. McIntosh, G. Franchetti and G. Turchetti, (1997). “New computational physics applications: parallel approach to nonlinear effects in beam dynamics”, in Proceedings of the Conference From APE100 to APEmille: Results and perspectives, Frascati (Roem) February 17-19 1997.
22. M. Giovannozzi, W. Scandale and E. Todesco (1997). “Numerical evaluation of long-term stability”, in Proceedings della Conferenza Beam stability and nonlinear dynamics, ed. by Z. Parsa, AIP New York, 25.
23. M. Giovannozzi, E. Todesco, A. Bazzani, R. Bartolini (1997). “PLATO: a Program Library for the Analysis of 4D Nonlinear Transverse Motion”, in 1997 Particle Accelerator Conference, ed. by M. Comyn *et al.*, IEEE Service Center, Piscataway, 2568.
24. M. Giovannozzi, E. McIntosh (1997). “Parallel Algorithms for the Analysis of Nonlinear Betatronic Motion”, in 1997 Particle Accelerator Conference, ed. by M. Comyn *et al.*, IEEE Service Center, Piscataway, 2571.
25. M. Giovannozzi (1997). “Computation of the Dynamic Aperture of 2D Generic Maps Using Invariant Manifolds”, in 1997 Particle Accelerator Conference, ed. by M. Comyn *et al.*, IEEE Service Center, Piscataway, 1451.
26. M. Giovannozzi, E. Todesco, W. Scandale (1997). “Inverse Logarithm Decay of Long-Term Dynamic Aperture in Hadron Colliders”, in 1997 Particle Accelerator Conference, ed. by M. Comyn *et al.*, IEEE Service Center, Piscataway, 1445.
27. R. Bartolini, M. Giovannozzi, W. Scandale, E. Todesco (1997). “Sorting Strategies for the LHC Dipoles”, in 17th Particle Accelerator Conference, ed. by M. Comyn *et al.*, IEEE Service Center, Piscataway, 1469.
28. R. Bartolini, M. Giovannozzi, W. Scandale and E. Todesco (1998). “Methods for the analysis of nonlinear single-particle dynamics: the contribution from CERN-Bologna collaboration in the framework of HCM network”, in Nonlinear and Stochastic Beam Dynamics in Accelerators - A Challenge to Theoretical and Computational Physics, ed. by A. Bazzani, J. Ellison, H. Mais, G. Turchetti, DESY-PROCEEDINGS-1998-03, 361.
29. M. Gemmi, E. Todesco, M. Giovannozzi (1998). “NERO: a code for evaluation of nonlinear resonances in 4D symplectic mappings”, in 6th European Particle Accelerator Conference, ed. by J. Poole *et al.*, Institute of Physics UK London, 1186.
30. M. Giovannozzi (1998). “Study of the dynamic aperture of the 4D quadratic map using invariant manifolds”, in 6th European Particle Accelerator Conference, ed. by J. Poole *et al.*, Institute of Physics UK London, 1274.
31. G. Arduini, M. Giovannozzi, D. Manglunki, M. Martini (1998). “Measurement of the optical parameters of a transfer line using multi-profile analysis”, in 6th European Particle Accelerator Conference, ed. by J. Poole *et al.*, Institute of Physics UK London, 891.
32. M. Giovannozzi (1998). “Space-charge simulations using parallel algorithms”, in 6th European Particle Accelerator Conference, ed. by J. Poole *et al.*, Institute of Physics UK London, 1189.
33. R. Bartolini, M. Giovannozzi, W. Scandale, E. Todesco (1998). “Long term estimates for sorting strategies of the LHC dipoles”, in 6th European Particle Accelerator Conference, ed. by J. Poole *et al.*, Institute of Physics UK London, 1336.
34. G. Arduini, M. Giovannozzi, K. Hanke, D. Manglunki, M. Martini, G. Métral (1999). “Measurement and Optimisation of the PS-SPS Transfer Line Optics”, in 1999 Particle Accelerator Conference, ed. by A. Luccio and W. MacKay, IEEE Computer Society Press, Piscataway, 1282.

35. R. Cappi, M. Giovannozzi, G. Métral (2000). “The Proton Beams for the Time-of-Flight Neutron Facility at the CERN-PS”, in Seventh European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1295.
36. M. Benedikt *et al.* (2000). “Transverse Performance of the Proton Beam Delivered by the CERN PS Complex for the Future LHC”, in Seventh European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1471.
37. B. Autin *et al.* (2000). “Design of a 2.2 GeV Accumulator and Compressor for a Neutrino Factory”, in Seventh European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 921.
38. B. Autin *et al.* (2000). “Application of Wigglers to Quasi-Isochronous Transport Systems”, in Seventh European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1030.
39. B. Autin *et al.* (2000). “A Slow-Cycling Proton Driver for a Neutrino Factory”, in Seventh European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 966.
40. R. Garoby for the Neutrino Factory Working Group (2001). “Current Activities for a Neutrino Factory at CERN”, in 18th International Conference on High Energy Accelerators - HEACC 2001.
41. M. Benedikt *et al.* (2001). “Performance of the LHC Pre-Injector”, in 18th International Conference on High Energy Accelerators - HEACC 2001.
42. M. Benedikt *et al.* (2001). “Injection Matching Studies Using Turn by Turn Beam Profile Measurements in the CERN PS”, in 5th European Workshop on Diagnostics and Beam Instrumentation - DIPAC2001, 189.
43. G. Arduini, Y. Chao, M. Giovannozzi, J. Klem, D. Manglunki, M. Martini (2001). “Analysis and Measurement of Coupling Effects in the Transfer Line from PS to SPS for the LHC Proton Beam”, in 2001 Particle Accelerator Conference, ed. by P. W. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 3144.
44. R. Cappi, M. Giovannozzi, E. Métral, G. Métral, F. Zimmermann (2001). “Electron Cloud Effects in the CERN PS”, in 2001 Particle Accelerator Conference, ed. by P. W. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 682.
45. M. Giovannozzi, M. Martini A.-S. Müller (2001). “A Low-Beta Stripping Insertion in the CERN PS to SPS Transfer Line for the LHC Ion Programme”, in 2001 Particle Accelerator Conference, ed. by P. W. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 1550.
46. P. Belochitskii *et al.* (2001). “Commissioning and First Operation of the Antiproton Decelerator (AD)”, in 2001 Particle Accelerator Conference, ed. by P. W. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 580.
47. R. Cappi, M. Giovannozzi, M. Martini, E. Métral, G. Métral, A.-S. Müller, R. Steerenberg (2002). “High-Density And High-Intensity Beams At CERN PS”, in 20th ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by W. Chou *et al.*, AIP Conference Proceedings 642, NY, 59.
48. B. Autin, C. Carli, M. Chanel, M. Giovannozzi, M. Martini, Ph. Royer (2002). “Lattice Design Studies For The CERN Proton Driver Accumulator And Compressor”, in 20th ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by W. Chou *et al.*, AIP Conference Proceedings 642, NY, 160.
49. C. Carli, G. Cyvoct, M. Giovannozzi, E. Métral, G. Métral, R. Steerenberg (2002). “Emittance Exchange By Crossing A Coupling Resonance”, in Eighth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1157.
50. R. Cappi, M. Giovannozzi (2002). “Adiabatic Capture of Charged Particles in Islands of Phase Space: a new Method for Multi-Turn Extraction”, in Eighth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1250.
51. M. E. Angoletta, M. Giovannozzi, M. Martini, E. Métral, G. Métral, A.-S. Müller, R. Steerenberg (2002). “Analysis of Multi-Turn Beam Position Measurements in the CERN PS”, in Eighth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1273.

52. I. Hofmann, G. Franchetti, M. Giovannozzi, M. Martini, E. Métral (2003). “Nonlinear Resonance Benchmarking Experiment at the CERN Proton Synchrotron”, in 2003 Particle Accelerator Conference, ed. by J. Chew, P. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 129.
53. R. Cappi, M. Giovannozzi, M. Martini, E. Métral, G. Métral, R. Steerenberg, A.-S. Müller (2003). “Adiabatic Beam Trapping in Stable Islands of Transverse Phase Space: Measurement Results at CERN Proton Synchrotron”, in 2003 Particle Accelerator Conference, ed. by J. Chew, P. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 388.
54. R. Cappi, M. Giovannozzi (2003). “Adiabatic Capture of Charged Particles in Stable Islands: a Novel Approach to Multi-Turn Extraction”, in 2003 Particle Accelerator Conference, ed. by J. Chew, P. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 2910.
55. R. Cappi, M. Giovannozzi, M. Martini, E. Métral, G. Métral, R. Steerenberg, A.-S. Müller (2003). “Optics Studies for the CERN Proton Synchrotron Machine: Linear and Nonlinear Modelling using Beam Based Measurements”, in 2003 Particle Accelerator Conference, ed. by J. Chew, P. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 2913.
56. M. Giovannozzi, M. Martini, E. Métral, G. Métral, R. Steerenberg (2003). “Measurements of Transverse Space-Charge Effects in the CERN Proton Synchrotron”, in 2003 Particle Accelerator Conference, ed. by J. Chew, P. Lucas and S. Webber, IEEE Computer Society Press, Piscataway, 2916.
57. M. Giovannozzi (2003). “Dynamic Aperture for Single-Particle Motion: Overview of Theoretical Background, Numerical Predictions and Experimental Results”, 29th ICFA Advanced Beam Dynamics Workshop on Beam Halo Dynamics, Diagnostics, and Collimation HALO’03, ed. by J. Wei, W. Fischer, P. Manning, AIP Conference Proceedings 693, NY, 26.
58. I. Hofmann, G. Franchetti, M. Giovannozzi, M. Martini, E. Métral (2003). “Observations and Simulation of a Fourth Order Resonance with Space Charge”, 29th ICFA Advanced Beam Dynamics Workshop on Beam Halo Dynamics, Diagnostics, and Collimation HALO’03, ed. by J. Wei, W. Fischer, P. Manning, AIP Conference Proceedings 693, NY, 73.
59. R. Cappi, S. Gilardoni, M. Giovannozzi, M. Martini, E. Métral, A.-S. Müller, A. Sakumi, R. Steerenberg (2004). “Multiturn Extraction Based on Trapping in Stable Islands at CERN PS: Recent Measurement Advances”, in Ninth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 175.
60. O. S. Brüning, S. Fartoukh, M. Giovannozzi, T. Risselada, F. Schmidt (2004). “Numerical Studies of the Impact of the Separation Dipoles and Insertion Quadrupoles Field Quality on the Dynamic Aperture of the CERN LHC”, in Ninth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1855.
61. M. Giovannozzi, P. Scaramuzzi (2004). “Nonlinear Dynamics Studies at the CERN Proton Synchrotron: Precise Measurements of Islands Parameters for the Novel Multi-Turn Extraction”, in Ninth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1858.
62. E. Métral, C. Carli, M. Giovannozzi, M. Martini, R. Steerenberg, G. Franchetti, I. Hofmann, J. Qiang, R. D. Ryne (2004). “Intensity Dependent Emittance Transfer Studies at the CERN Proton Synchrotron”, in Ninth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1891.
63. E. Métral, M. Giovannozzi, M. Martini, R. Steerenberg, G. Franchetti, I. Hofmann, J. Qiang, R. D. Ryne (2004). “Space-Charge Experiments at the CERN Proton Synchrotron”, 33rd ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by I. Hofmann, J.-M. Lagniel, R. W. Hasse, AIP Conference Proceedings 773, NY, 122.
64. G. Franchetti, I. Hofmann, M. Giovannozzi, M. Martini, E. Métral (2004). “Long Term Simulations of Space Charge and Beam Loss Observed in the CERN Proton Synchrotron”, 33rd ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by I. Hofmann, J.-M. Lagniel, R. W. Hasse, AIP Conference Proceedings 773, NY, 137.
65. I. Hofmann, G. Franchetti, M. Giovannozzi, M. Martini, E. Métral, J. Qiang, R. D. Ryne (2004). “Simulation Aspects of the Code Benchmarking Based on the CERN-PS “Montague-Resonance” Experiment”, 33rd ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by I. Hofmann, J.-M. Lagniel, R. W. Hasse, AIP Conference Proceedings 773, NY, 169.

66. R. Cappi, S. Gilardoni, M. Giovannozzi, M. Martini, E. Métral, P. Scaramuzzi, R. Steerenberg, A.-S. Müller (2004). “Multiturn Extraction Based on Trapping in Stable Islands”, 33rd ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by I. Hofmann, J.-M. Lagniel, R. W. Hasse, AIP Conference Proceedings 773, NY, 296.
67. R. Cappi, S. Gilardoni, M. Giovannozzi, M. Martini, E. Métral, J. Morel, P. Scaramuzzi, R. Steerenberg, A.-S. Müller (2005). “Multi-turn Extraction Based on Trapping in Stable Islands”, HHH-2004: First CARE-HHH-APD Workshop on Beam Dynamics in Future Hadron Colliders and Rapidly Cycling High-Intensity Synchrotrons, ed. by F. Ruggiero, W. Scandale, F. Zimmermann, *CERN-2005-006*, 215 .
68. M. Giovannozzi, R. Cappi, S. Gilardoni, M. Martini, E. Métral, R. Steerenberg, A.-S. Müller (2006). “Final Results from the Novel Multiturn Extraction Studies at CERN Proton Synchrotron”, in 2005 Particle Accelerator Conference, ed. by C. Horak, IEEE Computer Society Press, Piscataway, 117.
69. I. Hofmann, G. Franchetti, J. F. Amundson, P. Spentzouris, S. M. Cousineau, J. A. Holmes, M. Giovannozzi, E. Métral, F. W. Jones, A. U. Luccio, S. Machida, J. Qiang, R. D. Ryne (2006) “Benchmarking of Simulation Codes Based on the Montague Resonance in the CERN Proton Synchrotron”, in 2005 Particle Accelerator Conference, ed. by C. Horak, IEEE Computer Society Press, Piscataway, 330.
70. M. Giovannozzi, J. Morel (2006). “A Novel Technique for Multiturn Injection in a Circular Accelerator Using Stable Islands in Transverse Phase Space”, in 2005 Particle Accelerator Conference, ed. by C. Horak, IEEE Computer Society Press, Piscataway, 1377.
71. E. Huttel, A. Ben Kalefa, I. Birkel, A.-S. Müller, P. Wesolowski, M. Giovannozzi, M. Pont, F. Pérez, (2006). “Operation with a Low Emittance Optics at ANKA”, in 2005 Particle Accelerator Conference, ed. by C. Horak, IEEE Computer Society Press, Piscataway, 2467.
72. M. Giovannozzi for the Multi-Turn Extraction Study Group, (2006). “Design and tests of a low-loss multi-turn ejection for the CERN PS”, in 39th ICFA Advanced Beam Dynamics Workshop on High Intensity high Brightness Hadron Beams, ed. by Y. Ho Chin, 192.
73. R. R. Steerenberg, J.-P. Burnet, M. Giovannozzi, E. Métral, O. Michels, B. Vandorpe (2006). “CERN Proton Synchrotron Working Point Control Using an Improved Version of the Pole-face-windings and Figure-of-eight Loop Powering”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 264.
74. M. Giovannozzi on behalf of PS Multi-Turn Study Group (2006). “Implementation of the Proposed Multiturn Extraction at the CERN Proton Synchrotron”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 1789.
75. M. Giovannozzi, R. de Maria, S. D. Fartoukh, S. S. Gilardoni, J.-B. Jeanneret, A. M. Lombardi, Y. Pappalippou, T. Risselada, (2006). “Dynamical Aperture Studies for the CERN LHC: Comparison between Statistical Assignment of Magnetic Field Errors and Actual Measured Field Errors”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 2128.
76. M. Giovannozzi, E. McIntosh (2006). “Parameter Scans and Accuracy Estimates of the Dynamical Aperture of the CERN LHC”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 2131.
77. P. Hagen, M. Giovannozzi, J.-P. Koutchouk, T. Risselada, S. Sanfilippo, E. Todesco, E. Wildner, (2006). “WISE: An Adaptative Simulation of the LHC Optics”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 2248.
78. F. Zimmermann *et al.* (2006). “Accelerator Physics Code Web Repository”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 2254.
79. E. Métral, F. Caspers, M. Giovannozzi, A. Grudiev, T. Kroyer, L. Sermeus (2006). “Kicker Impedance Measurements for the Future Multi-turn Extraction of the CERN Proton Synchrotron”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 2919.
80. O. S. Brüning on behalf of the LHC Commissioning Team, (2006). “LHC Progress and Commissioning Plans”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 14.

81. R. Tomas, O.S. Brüning, R. Calaga, S.D. Fartoukh, A. Franchi, M. Giovannozzi, Y. Papaphilippou, S. Peggs, F. Zimmermann (2006). “Procedures and Accuracy Estimates for Beta-beat Correction in the LHC”, in Tenth European Particle Accelerator Conference, ed. by J. Poole and C. Petit-Jean-Genaz, Institute of Physics UK London, 2023.
82. G. Franchetti *et al.* (2007). “Space charge and electron cloud issues”, in Third CARE-HHH-APD Workshop “LHC-LUMI-06”, ed. by W. Scandale, T. Taylor, F. Zimmermann, CERN-2007-002, 192.
83. L. Bottura *et al.* (2007). “Magnet acceptance and allocation at the LHC Magnet Evaluation Board”, in 2007 Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 3739.
84. D. Missiaen *et al.* (2007). “Geometry of the LHC short straight sections before installation in the tunnel: resulting aperture, axis and bpm positioning”, in 2007 Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 335.
85. M. Giovannozzi (2008). “Tune, chromaticity, and coupling observables”, in Proceedings 5th CARE-HHH-ABI Workshop “Shottky, Tune and Chromaticity diagnostics (with real time feedback)”, ed. by K. Wittenburg, CARE-Conf-08-003-HHH, 49.
86. P. Hagen, M. Giovannozzi, J.-P. Koutchouk, T. Risselada, F. Schmidt, E. Todesco, E. Wildner (2008). “WISE: a Simulation of the LHC Optics Including Magnet Geometrical Data”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 1744.
87. M. Aiba, H. Burkhardt, S. Fartoukh, M. Giovannozzi, S. M. White (2008). “Optics Flexibility in the LHC at Top Energy”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 2524.
88. F. Borgnolutti, O. Brüning, U. Dorda, S. Fartoukh, M. Giovannozzi, W. Herr, R. De Maria, M. Meddahi, E. Todesco, R. Tomás, F. Zimmermann (2008). “Analysis of Optical Layouts for the Phase 1 Upgrade of the CERN Large Hadron Collider Insertion”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 2551.
89. R. Tomás, M. Giovannozzi, R. De Maria (2008). “Non-linear Correction Schemes for the Phase 1 LHC Insertion Region Upgrade and Dynamic Aperture”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 2569.
90. A. Franchi, S. Gilardoni, M. Giovannozzi (2008). “Progress in the Beam Preparation for the Multi-turn Extraction at the CERN Proton Synchrotron”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 3089.
91. A. Franchi, S. Gilardoni, M. Giovannozzi (2008). “Experimental Evidence of Beam Trapping with One-third and One-fifth Resonance Crossing”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 3092.
92. A. Franchi, S. Gilardoni, M. Giovannozzi (2008). “Adiabaticity and Reversibility Studies for Beam Splitting Using Stable Resonances”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 3095.
93. M. Giovannozzi, D. Quattraro, G. Turchetti (2008). “Stability Change of Fourth-order Resonance with Application to Multi-turn Extraction Schemes”, in Eleventh European Particle Accelerator Conference Proceedings, ed. by C. Petit-Jean-Genaz, Institute of Physics UK London, 3110.
94. M. Giovannozzi (2008). “Optics issues for Phase 1 and Phase 2 upgrades”, in CARE-HHH-APD Workshop on Interaction Regions for the LHC Upgrade, DAFNE, and SuperB Proceedings, ed. by W. Scandale and F. Zimmermann, CERN-2008-006, 51.
95. R. Tomás, M. Giovannozzi, R. de Maria (2008). “Correction of multipolar field errors in insertion regions for the Phase 1 LHC upgrade and dynamic aperture”, in CARE-HHH-APD Workshop on Interaction Regions for the LHC Upgrade, DAFNE, and SuperB Proceedings, ed. by W. Scandale and F. Zimmermann, CERN-2008-006, 62.
96. L. Bottura, M. Buzio, N. Catalan-Lasheras, L. Deniau, M. Di Castro, S. Fartoukh, M. Giovannozzi, P. Hagen, J.-P. Koutchouk, M. Lamont, J. Miles, V. Remondino, N. Sammut, S. Sanfilippo, F. Schmidt, D. Sernelius, R. Steinhagen, M. Strzelczyk, R. Tomás, E. Todesco, W. Venturini-Delsolaro, L. Walckiers, J. Wenninger, R. Wolf, P. Xydi (2009). “First field test of FiDeL: The magnetic field description for the LHC”, in 2007 Particle Accelerator Conference Proceedings, 241.

97. S. Gilardoni, F. Arnold Malandain, E. Benedetto, T. Bohl, S. Cettour Cave, K. Cornelis, H. Damerau, F. Follin, T. Fowler, A. Franchi, P. Freyermuth, H. Genoud, R. Giachino, M. Giovannozzi, S. Hancock, Y. Le Borgne, D. Manglunki, G. Métral, L. Pereira, J. Ridewood, Y. Riva, M. Schokker, L. Sermeus, R. Steerenberg, B. Vandrope, J. Wenninger (2009). “First Results for the Beam Commissioning of the CERN Multi-Turn Extraction”, in 2007 Particle Accelerator Conference Proceedings, 1578.
98. R. Assmann, M. Giovannozzi, Y. Papaphilippou, F. Zimmermann, A. Caldwell, G. Xia (2009). “Generation of short Proton bunches in the CERN Accelerator Complex”, in 2007 Particle Accelerator Conference Proceedings, 4542.
99. S. Fartoukh, M. Giovannozzi, V. Kain, M. Lamont, Y. Sun, R. Tomás, F. Zimmermann, R. Calaga (2009). “Linear & Nonl. optics checks during LHC injection tests”, in 2007 Particle Accelerator Conference Proceedings, 2546.
100. R. Tomas, M. Aiba, S. Fartoukh, A. Franchi, M. Giovannozzi, V. Kain, M. Lamont, G. Vanbavinckhove, J. Wenninger and F. Zimmermann, R. Calaga, A. Morita (2009). “First beta-beating measurement in the LHC”, in 2007 Particle Accelerator Conference Proceedings, 2351.
101. S. Redaelli, I. Agapov, R. Calaga, B. Dehning, M. Giovannozzi, F. Roncarolo, R. Tomás (2009). “First Beam Based Aperture Measurements in the Arcs of the CERN Large Hadron Collider”, in 2007 Particle Accelerator Conference Proceedings, 2525.
102. S. Gilardoni *et al.* (2009). “Installation and Hardware commissioning of the Multi-Turn extraction at the CERN proton synchrotron”, in 2007 Particle Accelerator Conference Proceedings, 1581.
103. E. Todesco *et al.* (2010). “The Magnetic Model of the LHC in the Early Phase of Beam Commissioning”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 55.
104. S. Redaelli, M.C. Alabau Pons, M. Giovannozzi, G.J. Müller, F. Schmidt, R. Tomás, J. Wenninger (2010). “LHC Aperture Measurements”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 477.
105. S. Redaelli, M.C. Alabau Pons, K. Fuchsberger, M. Giovannozzi, M. Lamont, G.J. Müller, F. Schmidt, X. Buffat (2010). “The Online Model for the Large Hadron Collider”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 480.
106. F. Zimmermann, M. Giovannozzi, S. Redaelli, Y. Sun, R. Tomás, W. Venturini Delsolaro, R. Calaga (2010). “Single-pass Beam Measurements for the Verification of the LHC Magnetic Model”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 489.
107. F. Zimmermann, M. Giovannozzi, A. Xagkoni (2010). “Interaction of Macro-Particles with the LHC Proton Beam”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 492.
108. R. De Maria, R. Calaga, M. Giovannozzi, Y. Sun, R. Tomás, F. Zimmermann (2010). “High Beta Operation Scenarios for Crab Cavities in the Insertion Region 4 of the CERN Large Hadron Collider”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 540.
109. R. Tomás *et al.* (2010). “LHC Optics Model Measurements and Corrections”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 1232.
110. M. Giovannozzi *et al.* (2010). “Results from the 2009 Beam Commissioning of the CERN Multi-turn Extraction”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 3619.
111. E. Benedetto, G. Arduini, S. Cettour Cave, F. Follin, S.S. Gilardoni, M. Giovannozzi, F. Roncarolo (2010). “Optics Measurements and Transfer Line Matching for the SPS Injection of the CERN Multi-turn Extraction Beam”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 3888.
112. M. Giovannozzi (2010). “Proposal of a Relationship between Dynamic Aperture and Intensity Evolution in a Storage Ring”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 4704.
113. M. Giovannozzi (2010). “Dynamic Aperture Computation for the as-built CERN Large Hadron Collider”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 4707.
114. M. Giovannozzi, A. Franchi, M. George (2010). “First Results of Space Charge Simulations for the Novel Multi-turn Injection”, in First International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 4710.

115. S. Gilardoni, M. Giovannozzi (2011). “First Observations of Intensity-dependent Effects for Transversally Split Beams”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 631.
116. F. Zimmermann, T. Baer, M. Giovannozzi, E.B. Holzer, E. Nebot Del Busto, A. Nordt, M. Sapinski, N. Fuster, Z. Yang (2011). “Simulation Studies of Macro-particles Falling into the LHC Proton Beam”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 634.
117. R.W. Assmann, R. Bruce, M. Giovannozzi, G.J. Müller, S. Redaelli, F. Schmidt, R. Tomás, J. Wenninger, D. Wollmann, M. Alabau, (2011). “Aperture Determination in the LHC Based on an Emittance Blowup Technique with Collimator Position Scan”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 1810.
118. G. Vanbavinckhove, M. Aiba, R. Bartolini, R. Calaga, R. Miyamoto, M. Giovannozzi, F. Schmidt, R. Tomás, E.H. Maclean (2011). “First Measurements of Higher Order Optics Parameters in the LHC”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 2073.
119. E.H. Maclean, M. Giovannozzi, F. Schmidt, R.J. Steinhagen, E. Todesco, R. Tomás, G. Vanbavinckhove, R. Bartolini (2011). “Non-linear Chromaticity Studies of the LHC at Injection”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 2199.
120. L. Deniau, N. Aquilina, L. Fiscarelli, M. Giovannozzi, P. Hagen, M. Lamont, G. Montenero, R.J. Steinhagen, M. Strzelczyk, E. Todesco, R. Tomás, W. Venturini Delsolaro, J. Wenninger (2011). “The Magnetic Model of the LHC during Commissioning to Higher Beam Intensities in 2010-2011”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 2466.
121. R. Veness, R.W. Assmann, A. Ball, A. Behrens, C. Bracco, G. Bregliozzi, R. Bruce, H. Burkhardt, G. Corti, M.A. Gallilee, M. Giovannozzi, B. Goddard, D. Mergelkuhl, E. Métral, M. Nessi, W. Riegler, J. Wenninger, N. Mounet, B. Salvant (2011). “Specification of New Vacuum Chambers for the LHC Experimental Interactions”, in Second International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, 1584.
122. Y. Jiao, Y. Cai, Y. Nosochkov, M.-H. Wang, R. De Maria, S. Fartoukh, M. Giovannozzi, E. McIntosh (2012). “Field Tolerances for the Triplet Quadrupoles of the LHC High Luminosity Lattice”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 169.
123. H. Bartosik et al. (2012). “Proposal of a Dummy Septum to Mitigate ring irradiation for the CERN PS Multi-Turn Extraction”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 499.
124. S. Gilardoni, M. Giovannozzi, C. Hernalsteens, A. Lachaize, G. Métral (2012). “Modified Extraction Scheme for the CERN PS Multi-Turn Extraction”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 502.
125. M. Giovannozzi *et al.* (2012). “LHCHome: A Volunteer computing system for Massive Numerical Simulations of Beam Dynamics and High Energy Physics Events”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 505.
126. S. Redaelli, C. Alabau Pons, R. Assmann, R. Bruce, M. Giovannozzi, G. Müller, J. Wenninger (2012). “Aperture measurements in the LHC interaction regions”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 508.
127. M. Giovannozzi, C. Hernalsteens (2012). “Numerical Study of Beam Trapping in Stable Islands for simple 2D model of Betatronic motion”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1350.
128. M. Giovannozzi, C. Yu (2012). “Proposal of an Inverse Logarithm Scaling Law for the Luminosity Evolution”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1353.
129. H. Burkhardt, M. Giovannozzi, T. Risselada (2012). “Tracking LHC Models with Thick Lens Quadrupoles: Results and Comparisons with the Standard Thin Lens tracking”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1356.
130. M. Giovannozzi, E. Laface (2012). “Investigations of scaling laws of dynamic aperture with time for numerical simulations including weak-strong beam-beam effects”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1359.
131. M. Albert *et al.* (2012). “First Experimental observations from the LHC Dynamic Aperture Experiment”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1362.

132. G. Arduini, J. Belleman, S. Gilardoni, M. Giovannozzi, C. Hernalsteens, A. Lachaize, G. Métral, Y. Pappalippou (2012). “Non-Linear Beam Dynamics Tests at the CERN PS in the Framework of the Multi-Turn Extraction”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1365.
133. J. Barranco García, R. Calaga, R. De Maria, M. Giovannozzi, A. Grudiev, R. Tomás (2012). “Study of Multipolar RF Kicks from the main deflecting mode in Compact Crab Cavities for LHC”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 1873.
134. E. Todesco *et al.* (2012). “The Magnetic Field Model of the Large Hadron Collider: Overview of Operation at 3.5 and 4 TeV”, in Third International Particle Accelerator Conference, ed. by F. Zimmermann and C. Eyberger, 2194.
135. G. Müller, X. Buffat, K. Fuchsberger, M. Giovannozzi, S. Redaelli, F. Schmidt (2012). “Toolchain for online modeling of the LHC”, in 13th International Conference on Accelerator and Large Experimental Control Systems, ed. by M. Robichon, 277.
136. M. Giovannozzi (2013). “The CERN LHC machine: Current status and future upgrade plans”, AIP Conf. Proc. 1560, 686.
137. E. McIntosh, R. De Maria, M. Giovannozzi (2013). “Investigation of Numerical Precision Issues of Long Term Single Particle Tracking”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 942.
138. H. Burkhardt, R. De Maria, M. Giovannozzi, T. Risselada (2013). “Improved TEAPOT Method and Tracking with Thick Quadrupoles for the LHC and its Upgrade”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 945.
139. R. De Maria *et al.* (2013). “Recent Developments and Future Plans for SixTrack”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 948.
140. Y. Nosochkov, Y. Cai, M.-H. Wang, R. De Maria, S.D. Fartoukh, M. Giovannozzi, E. McIntosh (2013). “Optimization of Triplet Quadrupoles Field Quality for the LHC High Luminosity Lattice at Collision Energy”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 1364.
141. Y. Nosochkov, Y. Cai, M.-H. Wang, R. De Maria, S.D. Fartoukh, M. Giovannozzi, E. McIntosh (2013). “Evaluation of Field Quality for Separation Dipoles and Matching Section Quadrupoles for the LHC High Luminosity Lattice at Collision Energy”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 1367.
142. P. Skowroński, T. Bach, M. Giovannozzi, A. Langner, Y.I. Levinsen, E.H. Maclean, S. Redaelli, T. Risselada, M. Solfaroli Camillocci, R. Tomás, G. Vanbavinckhove, M.J. McAteer, R. Miyamoto, T. Persson (2013). “Optics Performance of the LHC During the 2012 Run”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 1433.
143. E.H. Maclean, M. Giovannozzi, W. Herr, Y.I. Levinsen, G. Papotti, T. Persson, P. Skowronski, R. Tomás, J. Wenninger (2013). “Understanding the Tune, Coupling, and Chromaticity Dependence of the LHC on Landau Octupole Powering”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 1976.
144. R. De Maria, S.D. Fartoukh, M. Giovannozzi (2013). “Specifications of the Field Quality at Injection Energy of the New Magnets for the HL-LHC Upgrade Project”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2603.
145. M. Giovannozzi, S. Cettour Cave, R. De Maria, M. Ludwig, A. Macpherson, S. Redaelli, F. Roncarolo, M. Solfaroli Camillocci, W. Venturini Delsolaro (2013). “Experimental Observations from the LHC Dynamic Aperture Machine Development Study in 2012”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2606.
146. M. Giovannozzi, R. De Maria, S.D. Fartoukh, A. Chancé, B. Dalena, J. Payet, K.M. Hock, M. Korostelev, A. Wolski, J. Resta-Lopez (2013). “Dynamic Aperture Performance for Different Collision Optics Scenarios for the LHC Luminosity Upgrade”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2609.

147. M. Giovannozzi, R. De Maria, S.D. Fartoukh (2013). “Specification of a System of Correctors for the Triplets and Separation Dipoles of the LHC Upgrade”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2612.
148. A.V. Bogomyagkov, E.B. Levichev, P.A. Piminov, A. Chancé, B. Dalena, J. Payet, R. De Maria, S.D. Fartoukh, M. Giovannozzi (2013). “Analysis of the Non-linear Fringe Effects of Large Aperture Triplets for the HL LHC Project”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2615.
149. M. Giovannozzi, R. De Maria, F. Lang (2013). “Analysis of Possible Functional Forms of the Scaling Law for Dynamic Aperture as a Function of Time”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2618.
150. C. Hernalsteens, T. Bach, S.S. Gilardoni, M. Giovannozzi, A. Lachaize, G. Sterbini, R. Tom ’as, R. Wasef (2013). “CERN PS Optical Properties Measured with Turn-by-turn Orbit Data”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2627.
151. C. Hernalsteens, C. Frye, M. Giovannozzi, A. Bazzani (2013). “Quantitative Evaluation of Trapping and Overall Efficiency for Simple Models in One-degree of Freedom”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2630.
152. C. Hernalsteens, H. Bartosik, L.N. Drosdal, S.S. Gilardoni, M. Giovannozzi, A. Lachaize, Y. Papaphilippou, A. Ulsroed (2013). “Design and Beam Measurements of Modified Fast Extraction Schemes in the CERN PS for Installing a Dummy Septum to Mitigate Ring Irradiation”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2633.
153. C. Hernalsteens, S. Damjanovic, S.S. Gilardoni, M. Giovannozzi (2013). “Numerical Simulations to Evaluate the Performance of CERN PS Dummy Septum to Reduce Irradiation for the Multi-Turn Extraction”, in Fourth International Particle Accelerator Conference, ed. by Z. Dai, C. Petit-Jean-Genaz, V. R. W. Schaa, C. Zhang, 2636.
154. N. Aquilina *et al.* (2014). “The FiDeL Model at 7 TeV”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 3069.
155. P. Hopchev *et al.* (2014). “A Beam Gas Vertex Detector for Beam Size Measurement in the LHC”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 3680.
156. B. Dalena *et al.* (2014). “Fringe Fields Modeling for the High Luminosity LHC Large Aperture Quadrupoles”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 993.
157. G.L. Sabbi, X. Wang, G. Arduini, M. Giovannozzi, E. Todesco (2014). “Conceptual Design Study of the High Luminosity LHC Recombination Dipole”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 2712.
158. A. Bazzani, M. Giovannozzi, C. Hernalsteens, J. Williams (2014). “Quantitative Analysis of Trapping Probability for Quasi-integrable Two-degree of Freedom Maps”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 3065.
159. Y. Nosochkov *et a.* (2014). “Specification of Field Quality of the Interaction Region Magnets of the High Luminosity LHC Based on Dynamic Aperture”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 1013.
160. M. Giovannozzi (2014). “Simple Models Describing the Time-evolution of Luminosity in Hadron Colliders”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 1017.
161. S. Persichelli, O.E. Berrig, M. Giovannozzi, J. Herbst, J. Kuczerowski, M. Migliorati, B. Salvant (2014). “Impedance Studies of the Dummy Septum for CERN PS Multi-turn Extraction”, in Fifth International Particle Accelerator Conference, ed. by C. Petit-Jean-Genaz, G. Arduini, P. Michel, R. Schaa, 1704.
162. R. De Maria *et al.* (2014). “The High Luminosity Challenge: Potential and Limitations of High-Intensity High-Brightness Beams in the LHC and its Injectors”, 54th ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by A. McCausey and R. Schaa, 1.

163. S.S. Gilardoni *et al.* (2014). “Long-term Beam Losses in the CERN Injector Chain”, 54th ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, ed. by A. McCauley and R. Schaa, 325.
164. M. Giovannozzi, S.S. Gilardoni, A. Huschauer, S. Machida, C.R. Prior, S.L. Sheehy (2015). “Fixed Points in Presence of Space Charge in Circular Particle Accelerators”, in Sixth International Particle Accelerator Conference, ed. by S. Henderson, T. Satogata, R. Schaa, 389.
165. M. Giovannozzi, Y. Cai, R. De Maria, E. McIntosh, Y. Nosochkov, M.-H. Wang (2015). “Dynamic Aperture Studies for the LHC High Luminosity Lattice”, in Sixth International Particle Accelerator Conference, ed. by S. Henderson, T. Satogata, R. Schaa, 705.
166. M. Fitterer, R. De Maria, S.D. Fartoukh, M. Giovannozzi (2015). “Beam Dynamics Requirements for the Powering Scheme of the HL-LHC Triplet”, in Sixth International Particle Accelerator Conference, ed. by S. Henderson, T. Satogata, R. Schaa, 2082.
167. M. Fitterer, R. De Maria, S.D. Fartoukh, M. Giovannozzi (2015). “Crossing Scheme and Orbit Correction in IR1/5 for HL-LHC”, in Sixth International Particle Accelerator Conference, ed. by S. Henderson, T. Satogata, R. Schaa, 2086.
168. R. De Maria, M. Giovannozzi, T. Persson, R. Tomas, Y. Wei (2015). “Analysis of Intensity-dependent Effects on LHC Transverse Tunes at Injection Energy”, in Sixth International Particle Accelerator Conference, ed. by S. Henderson, T. Satogata, R. Schaa, 2108.
169. N. Pradhan, S.S. Gilardoni, M. Giovannozzi, G. Iadarola, G. Rumolo (2015). “Electron-Cloud Studies for Transversely Split Beams”, in Sixth International Particle Accelerator Conference, ed. by S. Henderson, T. Satogata, R. Schaa, 399.
170. M. Rihl *et al.* (2016). “Employing Beam-Gas Interaction Vertices for Transverse Profile Measurements”, in Seventh International Particle Accelerator Conference, ed. by K. S. Kim, I. S. Ko, K. R. Kim, V. R. W. Schaa, 296.
171. P. Hermes *et al.* (2016). “Improved Aperture Measurements at the LHC and Results from their Application in 2015”, in Seventh International Particle Accelerator Conference, ed. by K. S. Kim, I. S. Ko, K. R. Kim, V. R. W. Schaa, 1446.
172. J. M. Jowett *et al.* (2016). “The 2015 Heavy-Ion Run of the LHC”, in Seventh International Particle Accelerator Conference, ed. by K. S. Kim, I. S. Ko, K. R. Kim, V. R. W. Schaa, 1493.
173. G. Papotti *et al.* (2016). “Operation of the LHC with Protons at High Luminosity and High Energy”, in Seventh International Particle Accelerator Conference, ed. by K. S. Kim, I. S. Ko, K. R. Kim, V. R. W. Schaa, 2066.
174. E. Maclean *et al.* (2016). “Non-Linear Errors in the Experimental Insertions of the LHC”, in Seventh International Particle Accelerator Conference, ed. by K. S. Kim, I. S. Ko, K. R. Kim, V. R. W. Schaa, 3472.
175. G. Sterbini *et al.* (2016). “Performance of Transverse Beam Splitting and Extraction at the CERN Proton Synchrotron in the Framework of Multi-turn Extraction”, in Seventh International Particle Accelerator Conference, ed. by K. S. Kim, I. S. Ko, K. R. Kim, V. R. W. Schaa, 3492.
176. R. Bruce, G. Arduini, H. Bartosik, R. De Maria, M. Giovannozzi, G. Iadarola, J.M. Jowett, M. Lamont, A. Lechner, K.S.B. Li, D. Mirarchi, E. Métral, T. Pieloni, S. Redaelli, G. Rumolo, B. Salvant, R. Tomás, J. Wenninger (2016). “LHC Run 2: Results and Challenges”, 57th ICFA Advanced Beam Dynamics Workshop on High-Intensity, High Brightness and High Power Hadron Beams, ed. by M. Eshraqi, G. Trahern, V. RW Schaa, 14.
177. A. Huschauer, J.C.C.M. Borburgh, S. Damjanovic, S.S. Gilardoni, M. Giovannozzi, C. Hernalsteens, M. Hourican, K. Kahle, G. Le Godec, O. Michels, G. Sterbini (2016). “Transverse Beam Splitting Made Operational: Recent Progress of the Multi-Turn Extraction at the CERN Proton Synchrotron”, 57th ICFA Advanced Beam Dynamics Workshop on High-Intensity, High Brightness and High Power Hadron Beams, ed. by M. Eshraqi, G. Trahern, V. RW Schaa, 65.
178. S. Machida, S.S. Gilardoni, M. Giovannozzi, S. Hirlander, A. Huschauer, C.R. Prior (2016). “Intensity Effects in the Formation of Stable Islands in Phase Space During the Multi-Turn Extraction Process at the CERN PS”, 57th ICFA Advanced Beam Dynamics Workshop on High-Intensity, High Brightness and High Power Hadron Beams, ed. by M. Eshraqi, G. Trahern, V. RW Schaa, 283.

179. G. Papotti *et al.* (2016). “LHC Operation at 6.5 TeV: Status and Beam Physics Issues”, in 2016 North American Particle Accelerator Conference, ed. by M. Power, V. Shiltsev, V. RW Schaa, M. White, 37.
180. A. Alexopoulos, *et al.* (2017). “First LHC Transverse Beam Size Measurements With The Beam Gas Vertex Detector”, in Eight International Particle Accelerator Conference, ed. by G. Arduini, M. Lindroos, J. Pranke, V. RW Schaa, M. Seidel, 1240.
181. E.H. Maclean, F. Carlier, M. Giovannozzi, T.H.B. Persson, R. Tomás (2017). “Effect of Linear Coupling on Nonlinear Observables at the LHC”, in Eight International Particle Accelerator Conference, ed. by G. Arduini, M. Lindroos, J. Pranke, V. RW Schaa, M. Seidel, 3151.
182. E.H. Maclean, F. Carlier, J.M. Coello de Portugal, A. Garcia-Tabares, M. Giovannozzi, L. Malina, T.H.B. Persson, P.K. Skowronski, R. Tomás (2017). “New Methods for Measurement of Nonlinear Errors in LHC Experimental IRs and their Application in the HL-LHC”, in Eight International Particle Accelerator Conference, ed. by G. Arduini, M. Lindroos, J. Pranke, V. RW Schaa, M. Seidel, 3155.
183. M. Crouch, T. Pieloni, R.B. Appleby, J. Barranco-Garcia, X. Buffat, M. Giovannozzi, E.H. Maclean, B.D. Muratori, C. Tambasco (2017). “Dynamic Aperture Studies of Long-Range Beam-Beam Interactions at the LHC”, in Eight International Particle Accelerator Conference, ed. by G. Arduini, M. Lindroos, J. Pranke, V. RW Schaa, M. Seidel, 3840.
184. J. Barranco, Y. Cai, D. Cameron, M. Crouch, R. De Maria, L. Field, M. Giovannozzi, P. Hermes, N. Hoimyr, D. Kaltchev, N. Karastathis, C. Luzzi, E. Maclean, E. McIntosh, A. Mereghetti, J. Molson, Y. Nosochkov, T. Pieloni, I. D. Reid, L. Rivkin, B. Segal, K. Sjobak, P. Skands, C. Tambasco, F. Van der Veken, I. Zacharov (2017). “LHC@Home: a BOINC-based volunteer computing infrastructure for physics studies at CERN”, Proceedings of the Third International Conference BOINC-based High Performance Computing: Fundamental Research and Development (BOINC:FAST 2017), ed. by E. Ivahsko and A. Rumyantsev, Published on CEUR-WS: 28-Oct-2017, 15.
185. A. Huschauer *et al.* (2018). “Approaching the High-Intensity Frontier Using the Multi-Turn Extraction at the CERN Proton Synchrotron”, 61st ICFA Advanced Beam Dynamics Workshop on High-Intensity and High-Brightness Hadron Beams, ed. by D. Jeon, D. Kim, V. RW Schaa, 231.
186. F. Van der Veken, M. Giovannozzi (2018). “Scaling Laws for the Time Dependence of Luminosity in Hadron Circular Accelerators based on Simple Models of Dynamic Aperture Evolution”, 61st ICFA Advanced Beam Dynamics Workshop on High-Intensity and High-Brightness Hadron Beams, ed. by D. Jeon, D. Kim, V. RW Schaa, 260.
187. F. Carlier *et al.* (2018). “Probing The Forced Dynamic Aperture in the LHC at top Energy Using AC Dipoles”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 165.
188. T. Persson *et al.* (2018). “Transverse Coupling Measurements with High Intensity Beams Using Driven Oscillations”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 208.
189. M. Pojer *et al.* (2018). “LHC Operational Experience of the 6.5 TeV Proton Run with ATS Optics”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 216.
190. B. Salvachua *et al.* (2018). “LHC Operational Scenarios During 2017 Run”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 220.
191. J. Jimenez *et al.* (2018). “Observations, Analysis and Mitigation of Recurrent LHC Beam Dumps Caused by Fast Losses in Arc Half-Cell 16L2”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 228.
192. Y. Nosochkov *et al.* (2018). “Optimized Arc Optics for the HE-LHC”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 277.
193. L. Medina *et al.* (2018). “New High Luminosity LHC Baseline and Performance at Ultimate Energy”, in Ninth International Particle Accelerator Conference, ed. by S. Koscielniak, T. Satogata, V. R.W. Schaa, J. Thomson, 408.
194. V. Sotiris *et a.* (2018). “The LHC Beam Gas Vertex Detector - a Non-Invasive Profile Monitor for High Energy Machines”, in 6th International Beam Instrumentation Conference, ed. by Z. Liu, S. Lidia, A. McCausey, V.R.W. Schaa, 323.

195. A. Bazzani *et al.* (2019). “Diffusion in stochastically perturbed Hamiltonian systems with application to the recent LHC dynamic aperture experiment”, in *Nonlinear Dynamics and Collective Effects in Particle Beam*, World Scientific, ed. by S. Chattopadhyay, M. Cornacchia, S. Di Mitri, 70.
196. M. Giovannozzi *et al.* (2019). “Could synchrotron light sources benefit from the experience at CERN with beams split in horizontal phase space?”, in *Nonlinear Dynamics and Collective Effects in Particle Beam*, World Scientific, ed. by S. Chattopadhyay, M. Cornacchia, S. Di Mitri, 298.
197. M. Höfer *et al.* (2019). “Dynamic Aperture at Injection Energy for the HE-LHC”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 480.
198. R. Steerenberg *et al.* (2019). “Operation and Performance of the Cern Large Hadron Collider During Proton Run 2”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 504.
199. R. Tomás *et al.* (2019). “LHC Run 2 Optics Commissioning Experience in View of HL-LHC”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 508.
200. F. Zimmermann *et al.* (2019). “Updated High-Energy LHC Design”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 524.
201. P.K. Skowronski, M. Giovannozzi, A. Huschauer (2019). “Linear and Non-Linear Optics Measurements in PS using Turn-by-Turn BPM Data”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 1114.
202. B. Wüerkner, *et al.* (2019). “Measuring Beamsizes with the LHC Beam Gas Vertex Detector”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 2680.
203. R. Tomás *et al.* (2019). “LHC Optics Measurement and Correction Software Progress and Plans”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 2773.
204. A. Herty *et al.* (2019). “HL-LHC Full Remote Alignment Study”, in *Tenth International Particle Accelerator Conference*, ed. by M. Boland, H. Tanaka, D. Button, R. Dowd, V.R.W. Schaa, E. Tan, 3716.
205. L. Deniau *et al.* (2019). “Upgrade of MAD-X for HL-LHC Project and FCC Studies”, in *ICAP’18*, ed. by V.R.W. Schaa, K. Makino, P. Snopok, M. Berz (MSU), 165.
206. R. De Maria *et al.* (2019). “SixTrack Project: Status, Runtime Environment, and New Developments”, in *ICAP’18*, ed. by V.R.W. Schaa, K. Makino, P. Snopok, M. Berz (MSU), 172.

CERN Reports

1. A. Bazzani, M. Giovannozzi, G. Servizi, E. Todesco, G. Turchetti, (1989). “Normal Forms for area preserving maps, resonances and dynamic aperture”, *CERN SPS 89 24 (AMS)*.
2. M. Giovannozzi and S.I. Tzenov (1992). “Statistical Description of Nonlinear Particle Motion in Cyclic Accelerators”, *CERN SL 92-38 (AP)*.
3. W. Fischer, M. Giovannozzi and F. Schmidt (1995). “The dynamic aperture experiment at the CERN SPS”, *CERN SL 95 96 (AP)*.
4. B. Autin *et al.* (1995). “The Antiproton Decelerator (AD), a Simplified Antiproton Source (Feasibility Study)”, *CERN PS 95- 36 (AR)*.
5. R. Bartolini, M. Giovannozzi, W. Scandale and E. Todesco (1996). “Test of the Sorting Methods at the CERN-SPS”, *CERN LHC Project Report 38*.
6. M. Giovannozzi, W. Scandale and E. Todesco (1996). “Prediction of Long-Term Stability in Large Hadron Colliders”, *CERN LHC Project Report 45*.
7. M. Giovannozzi (1996). “Analysis of the stability domain of planar symplectic maps using invariant manifolds”, *CERN PS 96 5 (PA)*.
8. M. Giovannozzi (1996). “Evaluation of the Dynamic Aperture of the CERN-LHC using Fast Indications of Long Term Stability”, *CERN PS 96 46 (PA)*.
9. M. Giovannozzi and E. McIntosh (1997). “Development of parallel codes for the study of nonlinear beam dynamics”, *CERN PS 96 47 (PA)*.
10. M. Giovannozzi and E. McIntosh (1997). “Parallel Algorithms for the Analysis of Non-Linear Betatronic Motion”, *CERN PS 97 42 (CA)*.
11. M. Giovannozzi, J-Y. Hémerly, C. Metzger, U. Mikkelsen, (1998). “Experimental Area of the CERN Antiproton Decelerator”, *CERN PS 98 47 (CA)*.
12. S. Andriamonje *et al.* (1998). “Feasibility Study of a Neutron Time Of Flight Facility at the CERN-PS”, *CERN PS 98 65 (CA)*.
13. M. Giovannozzi, A. Jansson, M. Martini (1999). “Simultaneous matching of dispersion function and Twiss parameters in a transfer line”, *CERN Yellow Report 99-07*
14. S. Andriamonje *et al.* (2000). “Neutron TOF Facility (PS213) Technical Design Report”, *CERN INTC 2000-004*
15. H. Haseroth for the CERN Neutrino Factory Working Group at CERN (2000). “CERN Ideas and Plans for a Neutrino Factory”, *CERN PS 2000-064 (PP)*.
16. H. Schönauer *et al.* (2000). “Proton Drivers for Neutrino Factories: the CERN Approach”, *CERN PS 2000-065 (AE)*.
17. R. Cappi *et al.* (2001). “Status of the PS for LHC Beam”, *CERN SL 2001-003 (DI)*.
18. R. Garoby for the Neutrino Factory Working Group (2001). “Status of European Studies for a Neutrino Factory at CERN”, *CERN PS 2001-055 (RF)*.
19. W. Chou, O. Brüning, M. Giovannozzi, E. Métral (2002). “Summary Report of Session VI”, in *CERN 2002-001*.
20. R. Cappi, M. Giovannozzi (2002). “Multiturn Extraction: Performance Analysis of Old and New Approaches”, *CERN PS 2002-077 (AE)*.
21. P. Gruber (Editor) *et al.* (2002). “The Study of a European Neutrino Factory Complex”, *CERN PS 2002-080 (PP)*.
22. R. Cappi, M. Giovannozzi (2002). “Computation of Betatron Mismatch and Emittance Blow-up for Multi-Turn Extraction”, *CERN PS 2002-083 (AE)*.
23. U. Abbondanno *et al.* (2003). “Measurements of Fission Cross Sections of Actinides”, *CERN-INTC-2003-021*.

24. O. E. Berrig, J. Borburgh, J.-P. Burnet, R. Cappi, M. Giovannozzi (Editor), W. Kalbreier, M. Martini, A.-S. Müller, E. Métral, K.-D. Metzmacher, J.-P. Riunaud, A. Sakumi, P. Scaramuzzi, L. Sermeus, R. Steerenberg, T. Zickler (2004). “Report of the Study Group on the New Multi-Turn Extraction in the PS Machine”, *CERN-AB-2004-003-ABP*.
25. O. Brüning, S. Fartoukh, M. Giovannozzi, A. M. Lombardi, T. Risselada, F. Schmidt (2004). “Field Quality Issues for LHC Magnets: Analysis and Perspectives for Quadrupoles and Separation Dipoles”, *CERN-AB-2004-014-ADM*.
26. G. Arduini for the PS-SPS Accelerator Complex Team (2004). “Beam Quality Preservation in the CERN PS-SPS Complex”, *CERN-AB-2004-047*.
27. L. Bottura *et al.* (2005). “The Magnet Evaluation Board”, *CERN-AB-2005-014*, 249.
28. G. Franchetti, M. Giovannozzi, I. Hofmann, M. Martini, E. Métral, J. Qiang, R. D. Ryne, R. Steerenberg, (2005). “Space-Charge Experiments at the CERN Proton Synchrotron”, *CERN-AB-2005-019*.
29. G. Franchetti, M. Giovannozzi, I. Hofmann, M. Martini, E. Métral (2005). “Long Term Simulations of Space Charge and Beam Loss Observed in the CERN Proton Synchrotron”, *CERN-AB-2005-021*.
30. G. Franchetti, M. Giovannozzi, I. Hofmann, M. Martini, E. Métral, J. Qiang, R. D. Ryne (2005). “Simulation Aspects of the Code Benchmarking Based on the CERN-PS Montague-resonance Experiment”, *CERN-AB-2005-022*.
31. E. Métral, M. Giovannozzi, M. Martini, R. Steerenberg, G. Franchetti, I. Hofmann (2006). “Observation of Octupole Driven Resonance Phenomena with Space Charge at the CERN Proton Synchrotron”, *CERN-AB-2006-003*.
32. M. Giovannozzi (2006) “Electrical circuits required for the minimum workable LHC during commissioning and first two years of operation”, *CERN-AB-2006-014*, 35,
33. S. Sanfilippo, P. Hagen, J.-P. Koutchouk, M. Giovannozzi, T. Risselada (2006) “Transfer function of the quadrupoles and beta-beating”, *CERN-AB-2006-014*, 151,
34. S. Gilardoni, M. Giovannozzi, M. Martini, E. Métral, P. Scaramuzzi, R. Steerenberg, A.-S. Müller (2006). “Resonant multi-turn extraction: Principle and experiments”, *CERN-AB-2006-022*.
35. A. Franchi, S. Gilardoni, M. Giovannozzi on behalf of the MTE Project Members (2009). “CERN leads the way with novel beam extraction”, *CERN Courier*, **49**, 2, 29.
36. R. Tomás, I. Agapov, M. Aiba, R. Calaga, B. Dehning, S. Fartoukh, A. Franchi, K. Fuchsberger, M. Giovannozzi, V. Kain, M. Lamont, A. Morita, L. Ponce, S. Redaelli, F. Roncarolo, Y. Sun, G. Vanbavinckhove, W. Venturini-Delsolaro, J. Wenninger, F. Zimmermann (2009). “Beam-based measurements”, Proceedings of the 2009 Chamonix workshop on LHC performance, *CERN-ATS-2009-001* 205
37. L. Bottura, M. Buzio, N. Catalan Lasheras, L. Deniau, M. Di Castro, M. Giovannozzi, P. Hagen, J.-P. Koutchouk, M. Lamont, J. Miles, V. Remondino, N. Sammut, S. Sanfilippo, F. Schmidt, D. Sernelius, M. Strzelczyk, E. Todesco, W. Venturini-Delsolaro, L. Walckiers, R. Wolf, P. Xydi (2009). “First Field Test of FiDeL, the Magnetic Field Description for the LHC”, Proceedings of the 2009 Chamonix workshop on LHC performance, *CERN-ATS-2009-001*, 241
38. R. Calaga *et al.* (2009). “Summary of the 3rd LHC Crab Cavity Workshop (LHC-CC09)”, *EuCARD-PUB-2010-007*.
39. G. Arduini, J. Borburgh, J. Burnet, C. Carli, M. Chanel, J. Cravero, H. Damerau, T. Fowler, S. Gilardoni, M. Giovannozzi, S. Hancock, E. Métral, A. Newborough, S. Pittet, L. Sermeus, R. Steerenberg, D. Tomasini, M. Vretenar (2010). “Possible improvements to the existing pre-injector complex in the framework of continued consolidation”, in *CERN-ATS-2010-026*, 228.
40. M. Aiba *et al.* (2010). “LHC optical model and necessary corrections”, in *CERN-ATS-2010-028*, 29.
41. B. Auchmann *et al.* (2010). “The magnetic model of the Large Hadron Collider”, in *CERN-ATS-2010-028*, 93.
42. R. Assmann, M. Ferro-Luzzi, M. Giovannozzi, W. Herr, J.M. Jowett, M. Lamont, E. Shaposhnikova (2010). “Beam parameters and machine performance to be reached in 2010”, in *CERN-ATS-2010-028*, 149.

43. C. Alabau Pons, M. Giovannozzi, G. Müller, S. Redaelli, F. Schmidt, R. Tomás, J. Wenninger (2010). “First beam-based aperture measurements in the arcs of the CERN Large Hadron Collider”, *CERN-ATS-2010-119*.
44. E. Todesco, C. Alabau Pons, N. Aquilina, L. Bottura, M. Buzio, L. Deniau, L. Fiscarelli, J. Garcia Perez, M. Giovannozzi, P. Hagen, M. Lamont, G. Montenero, V. Remondino, S. Redaelli, F. Schmidt, R. Steinhagen, M. Strzelczyk, R. Tomás Garcia, W. Venturini Delsolaro, J. Wenninger, L. Walckiers (2011). “Can we improve the magnetic model/cycle and their effects?”, in *CERN-ATS-2011-017*, 81.
45. R. Tomás, M. Aiba, C. Alabau, O. Brüning, R. Calaga, M. Giovannozzi, V. Kain, P. Hagen, M. Lamont, R. Miyamoto, F. Schmidt, M. Strzelczyk and G. Vanbavinckhove (2011). “The LHC optics in practice”, in *CERN-ATS-2011-017*, 211.
46. B. Auchmann, L. Bottura, M. Buzio, L. Deniau, L. Fiscarelli, M. Giovannozzi, P. Hagen, M. Lamont, G. Montenero, G. Mueller, M. Pereira, S. Redaelli, V. Remondino, F. Schmidt, R. Steinhagen, M. Strzelczyk, R. Tomás Garcia, E. Todesco, W. Venturini Delsolaro, L. Walckiers, J. Wenninger, R. Wolf, F. Zimmermann (2011). “The Magnetic Model of the Large Hadron Collider”, *CERN-ATS-2011-189*.
47. L. Deniau, N. Aquilina, L. Fiscarelli, M. Giovannozzi, P. Hagen, M. Lamont, G. Montenero, R. Steinhagen, M. Strzelczyk, E. Todesco, R. Tomás, W. Venturini Delsolaro, J. Wenninger (2011). “The Magnetic Model of the LHC during Commissioning to higher Beam Intensities in 2010-2011”, *CERN-ATS-2011-249*.
48. R. Bartolini, O. Brüning, R. Calaga, D. Einfeld, M. Giovannozzi, J.-P. Koutchouk, C. Milardi, J. Safranek, R. Tomás, J. Wenninger, F. Zimmermann (2012). “Summary of the AccNet-EuCARD Workshop on Optics Measurements, Corrections and Modelling for High-Performance Storage Rings ”OMCM”, CERN, Geneva, 20-22 June 2011”, *CERN-ATS-2012-002*, *EuCARD-CON-2012-004*.
49. R. Steerenberg *et al.* (2012). “Performance reach of the injector complex in 2012”, in *CERN-2012-006*, p.145.
50. M. Giovannozzi, (2012). “Optics Options for the 2012 Proton Run”, in *CERN-2012-006*, 176.
51. G. Arduini *et al.* (2012). “5th LHC Crab Cavity Workshop, LHC-CC11 Workshop Summary Report”, *CERN-ATS-2012-055*, *EuCARD-PUB-2012-001*.
52. S. Redaelli, R. Assmann, R. Bruce, X. Buffat, M. Giovannozzi, M. Lamont, R. Miyamoto, G. Müller, R. Tomás, G. Vanbavinckhove, J. Wenninger (2012). “Aperture and Optics - Measurements and Conclusions”, *CERN-ATS-2012-83*.
53. O. Brüning, M. Giovannozzi, V. Kain, M. Lamont, Y. Levinsen, S. Redaelli, P. Skowronski, R. Steinhagen, R. Tomás, F. Zimmermann (2013). “Summary of the 2013 LHC Optics Measurement and Correction review”, *CERN-ACC-2013-0130*.
54. G. Arduini, S. Fartoukh, B. Holzer, M. Giovannozzi, A. Wolski (2013). “Optics and Lattice Files”, *CERN-ACC-2013-009*.
55. G. Arduini, S. Fartoukh, B. Holzer, M. Giovannozzi, A. Wolski (2013). “Distribution of Preliminary Optics and Lattice Files to all Work Packages”, *CERN-ACC-2013-021*.
56. M. Giovannozzi, S. Fartoukh, R. De Maria (2014). “Initial Models of Correction Systems”, *CERN-ACC-2014-0010*.
57. Y. Nosochkov, Y. Cai, M.-H. Wang, S. Fartoukh, M. Giovannozzi, R. De Maria, (2014). “Initial estimates of dynamic aperture and field quality specifications”, *CERN-ACC-2014-0011*.
58. C. Bertone *et al.* (2014). “Studies and implementation of the PS dummy septum to mitigate irradiation of magnetic septum in straight section 16”, *CERN-ACC-2014-0043*.
59. R. Bruce, R. De Maria, S. Fartoukh, M. Giovannozzi, S. Redaelli, R. Tomas, J. Wenninger (2014). “Parameters for HL-LHC aperture calculations and comparison with aperture measurements”, *CERN-ACC-2014-0044*.
60. Y. Nosochkov, Y. Cai, M.-H. Wang, M. Giovannozzi, R. De Maria (2014). “Magnets field quality specifications: Deliverable: D2.2”, *CERN-ACC-2014-0295*.
61. S. Fartoukh, M. Fitterer, M. Giovannozzi, R. De Maria (2014). “Corrector magnets specifications Deliverable: D2.3 ”, *CERN-ACC-2014-0296*.

62. G. Arduini *et al.* (2014). “US1: what do we gain in beam performance”, in RLIUP: Review of LHC and Injector Upgrade Plans proceedings, ed. by B. Goddard and F. Zimmermann, CERN-2014-006, pp.57-64.
63. G. Arduini *et al.* (2014). “How to maximize the HL-LHC performance”, in RLIUP: Review of LHC and Injector Upgrade Plans proceedings, ed. by B. Goddard and F. Zimmermann, CERN-2014-006, pp.81-94.
64. R. Bruce, G. Arduini, S. Fartoukh, M. Giovannozzi, M. Lamont, E. Métral, T. Pieloni, S. Redaelli, J. Wenninger, (2014). “Baseline LHC machine parameters and configuration of the 2015 proton run”, in Chamonix 2014: LHC Performance Workshop proceedings, CERN-2015-002, pp.100-106.
65. M. Giovannozzi (2015). “Optics options for the 2015 LHC run”, in Chamonix 2014: LHC Performance Workshop proceedings, CERN-2015-002, pp.107-110.
66. S. Redaelli, G. Arduini, M. Giovannozzi, M. Lamont, R. Tomás, J. Wenninger (2015). “Strategy for First Two Months of LHC Beam Commissioning (Commissioning to First Stable Beams)”, in Chamonix 2014: LHC Performance Workshop proceedings, CERN-2015-002, pp.125-128.
67. M. Fitterer, S. Fartoukh, M. Giovannozzi, R. De Maria (2014). “Crossing scheme and orbit correction in IR1/5 for HL-LHC”, CERN-ACC-2015-0014.
68. G. Arduini, O. Brüning, M. Giovannozzi, E. Métral, Y. Papaphilippou, T. Pieloni, A. Valishev, A. Wolski (2014). “Collation of Data for Parameter Optimization: Milestone: MS32”, CERN-ACC-2015-0033.
69. S. Gilardoni, M. Giovannozzi, C. Hernalsteens, A. Huschauer, G. Sterbini on behalf of the MTE Project Members and of the OP crew (2016). “PS beam extraction becomes more efficient”, CERN Courier, **56**, 1, 35.
70. R. Bruce, C. Bracco, R. De Maria, M. Giovannozzi, S. Redaelli, R. Tomás Garcia, F. M. Velotti, J. Wenninger (2016). “Parameters for aperture calculations at injection for HL-LHC”, CERN-ACC-2016-0328.
71. R. D’Agnolo, A. Apollonio, K. Aulenbacher, M. Biagini, M. Boscolo, A. Drago, M. Eshraqi, G. Franchetti, A. Faus-Golfe, M. Giovannozzi, F. Hug, A. Jansson, Q. Qin, G. Rumolo, V. Shiltsev, R. Tomas, F. Zimmermann (2017). “Vol. 44 - Strategy for Extreme Beam Facilities”, CERN-ACC-2017-0033.
72. R. Bruce, C. Bracco, R. De Maria, M. Giovannozzi, S. Redaelli, R. Tomas Garcia, F. M. Velotti, J. Wenninger, (2017). “Updated parameters for HL-LHC aperture calculations for proton beams”, CERN-ACC-2017-0051.
73. O. Brüning *et al.* (2017). “LHC Full Energy Exploitation Study: Operation at 7 TeV”, CERN-ACC-2017-0086.
74. S. Fartouk, M. Giovannozzi, D. Missaen, E. Todesco, F. Zimmermann (2017)., “Considerations on a Partial Energy Upgrade of the LHC”, ARIES-2017-001; CERN-ACC-2017-096.
75. G. Arduini, H. Bartosik, J. Boyd, C. Bracco, X. Buffat, R. Bruce, F. Baudrenghien, R. Calaga, J. Coello De Portugal, R. De Maria *et al.* (2017). “What can be learnt in Run 2 for Run 3 and HL-LHC runs”, In : 7th Evian Workshop on LHC beam operation, Evian Les Bains, France, 13 - 15 Dec 2016, pp.255-264
76. R. Bruce, R. De Maria, M. Giovannozzi, P. D. Hermes, A. Mereghetti, D. Mirarchi, S. Redaelli (2017). “ β^* reach in 2017”, In : 7th Evian Workshop on LHC beam operation, Evian Les Bains, France, 13 - 15 Dec 2016, pp.245-250
77. D. Gamba, G. Arduini, M. Cerqueira Bastos, J. Coello De Portugal, R. De Maria, M. Giovannozzi, M. Martino, R. Tomas Garcia (2017). “Beam dynamics requirements for HL?LHC electrical circuits”, CERN-ACC-2017-0101.
78. Y. Cai, R. De Maria, M. Giovannozzi, Y. Nosochkov, F.F. Van der Veken (2018). “Dynamic aperture studies for HL-LHC V1.0”, CERN-ACC-2018-0054.
79. O. Brüning *et al.* (2019). “LHC Full Energy Exploitation Study: Operation at Ultimate Energy of 7.5 TeV”, CERN-ACC-2019-0015.
80. E.H. Maclean *et al.* (2019). “Detailed review of the LHC optics commissioning for the nonlinear era”, CERN-ACC-2019-0029.
81. D. Gamba *et al.* (2019). “Update in beam dynamics requirements for HL-LHC electrical circuits”, CERN-ACC-2019-0030.
82. E. Koukovini Platia *et al.* (2019). “Protons Beyond the LHC Injectors Upgrade Project”, CERN-PBC-REPORT-2019-004.

CERN Notes

1. X. Altuna *et al.* (1991). “The 1991 dynamic aperture experiment at the CERN SPS”, *LHC Note 171*.
2. M. Giovannozzi and F. Schmidt (1992). “Preparation of the SPS Diffusion Experiment”, *CERN SL 92-22 (MD-Note)*.
3. W. Fischer, M. Giovannozzi and F. Schmidt (1992). “Instrumentation and Equipment for the Diffusion Experiment”, *CERN SL 92-42 (MD-Note)*.
4. M. Giovannozzi and F. Schmidt (1993). “Analysis of coupling in LHC version 2”, *CERN SL/Note 93-62 (AP)*.
5. M. Giovannozzi and F. Ruggiero (1993). “Application of Normal Forms to improve LEP dynamic aperture”, *CERN SL/Note 93-91 (AP)*.
6. M. Giovannozzi (1993). “Description of Software Tools to Perform Tune-Shift Correction Using Normal Forms”, *CERN SL/Note 93-111 (AP)*.
7. M. Giovannozzi, W. Scandale and F. Schmidt (1993). “Tune-shift corrections for LHC version 2 using normal forms”, *LHC Note 230*.
8. A. Bazzani, M. Giovannozzi and E. Todesco (1994). “A program to compute Birkhoff Normal Forms of a Symplectic Map in \mathbf{R}^4 ”, *CERN SL/Note 94-50 (AP)*.
9. M. Giovannozzi and J.-Y. Hémerly (1994). “M1 Transfer Line of LEAR for PS185-Hyperons Experiment”, *CERN PS Note 94-19 (PA)*.
10. M. Giovannozzi and J.-Y. Hémerly (1994). “Steering in the E5 Line of LEAR”, *CERN PS Note 94-22 (PA)*.
11. M. Giovannozzi and J.-Y. Hémerly (1994). “Results from the setting up of the S4 line of LEAR for PS200-TRAP Experiment”, *CERN PS Note 94-34 (PA)*.
12. M. Giovannozzi and J.-Y. Hémerly (1994). “Results from the setting up of the joint run of PS197-CRYSTAL BARREL and PS201-OBELIX”, *CERN PS Note 94-36 (PA)*.
13. M. Giovannozzi (1995). “Correction of the Vertical Beam Trajectory in the E5 Line of LEAR”, *CERN PS Note 95-04 (PA)*.
14. M. Giovannozzi and J.-Y. Hémerly (1995). “Evaluation of Different Configurations for PS185-HYPERONS Experiment in the year 1996”, *CERN PS Note 95-08 (PA)*.
15. M. Giovannozzi (1995). “M1 Transfer Line of LEAR for PS209-NEUTRON HALO Experiment”, *CERN PS Note 95-11 (PA)*.
16. M. Giovannozzi (1995). “Results from the MD on the beam optics for PS197-CRYSTAL BARREL at 200 MeV/c”, *CERN PS Note 95-19 (PA)*.
17. M. Giovannozzi and J.-Y. Hémerly (1995). “Estimate of the beam size for a new target configuration for PS201-OBELIX”, *CERN PS Note 95-22 (PA)*.
18. M. Giovannozzi (1995). “M1 Transfer Line of LEAR for EMU20 Experiment”, *CERN PS Note 95-23 (PA)*.
19. M. Giovannozzi, G. Granger and J.-Y. Hémerly (1995). “Experiments in the hall of AC in the context of the AD project”, *CERN PS Note 95-25 (PA)*.
20. B. Autin *et al.* (1995). “Antiproton Decelerator (AD). (Feasibility Study)”, *CERN PS Note 95-18 (AR)*.
21. M. Giovannozzi and J.-Y. Hémerly (1996). “Focus optimization of the beam optics for PS197-CRYSTAL BARREL at 200 MeV/c”, *CERN PS Note 96-02 (PA)*.
22. M. Giovannozzi and J.-Y. Hémerly (1996). “Fast Extraction in the M1 line for PS205-HELIUM TRAP at 105 MeV/c”, *CERN PS Note 96-03 (PA)*.
23. M. Giovannozzi and J.-Y. Hémerly (1996). “Evaluation of the influence of a new target configuration for PS201-OBELIX”, *CERN PS Note 96-07 (PA)*.
24. L. Durieu, M. Giovannozzi and J.-Y. Hémerly (1996). “Measurement of beam halo in FT61S for the DIRAC experiment”, *CERN PS Note 96-09 (PA)*.

25. M. Giovannozzi (1996). “EVE: Extendable and Versatile working Environment”, *CERN PS Note 96-17 (PA)*.
26. M. Giovannozzi and J.-Y. Hémerly (1996). “Beam optics for PS201-OBELIX via the X1 line”, *CERN PS Note 96-22 (PA)*.
27. L. Durieu, M. Giovannozzi, J.-Y. Hémerly and B. Williams (1996). “Proposal for the Beam Lines & Areas for Tests and Experiments in the East Hall”, *CERN PS Note 96-25 (PA)*.
28. M. Giovannozzi (1996). “C1 Transfer Line of LEAR for PS185-HYPERONS Experiment”, *CERN PS Note 96-29 (PA)*.
29. M. Benedikt *et al.* (1997). “Compte rendu de la séance d’étude du 22 Avril 97 sur la structure a basse fréquence de l’extraction lente SE61”, *CERN PS Note 97-14 (CA)*.
30. O. Ferrando, M. Giovannozzi and J.-Y. Hémerly (1997). “Test of Pulse to Pulse Modulation (PPM) of the East Area beam transport”, *CERN PS Note 97-15 (CA)*.
31. M. Benedikt *et al.* (1997). “Reduction of the transverse emittance of the SFTPRO beam to evaluate the impact on SPS injection efficiency: scraping at the PS-BOOSTER”, *CERN PS Note 97-26 (CA)*.
32. G. Adrian *et al.* (1997). “Reduction of the transverse emittance of the SFTPRO beam to evaluate the impact on SPS injection efficiency: scraping at the PS”, *CERN PS Note 97-29 (CA)*.
33. J. Bossler *et al.* (1997). “Feasibility study of a decelerating Radio Frequency Quadrupole for the Antiproton Decelerator AD”, *CERN PS Note 97-36 (HP)*.
34. M. Giovannozzi, D. Manglunki and M. Martini (1998). “Nonlinear Fields at Extraction”, *CERN PS Note 98-03 (DI)*.
35. G. Arduini, M. Giovannozzi, D. Manglunki and M. Martini (1998). “Multigrid Measurements in a Transfer Line”, *CERN PS Note 98-03 (DI)*.
36. R. Bartolini, M. Giovannozzi, W. Scandale and E. Todesco (1998). “Methods for the analysis of nonlinear single-particle dynamics: the contribution from CERN-Bologna collaboration in the framework of HCM network”, *CERN LHC Project Note 134*.
37. M. Giovannozzi (1998). “The AD Experimental Zones”, *CERN PS Note 98-07 (CA)*.
38. M. Giovannozzi (1998). “Experimental transfer lines and areas for the AD machine”, *CERN PS Note 98-13 (CA)*.
39. G. Arduini, M. Giovannozzi, K. Hanke, J.-Y. Hémerly, M. Martini (1998). “MAD and BeamOptics Description of the TT2/TT10 Transfer Lines. Part I: Optics without Emittance Exchange Insertion”, *CERN PS Note 98-14 (CA)*.
40. G. Arduini, M. Giovannozzi, K. Hanke, J.-Y. Hémerly (1998). “Study of the TT2/TT10 Transfer Line Optics via Transfer Matrix Measurement”, *CERN PS Note 98-20 (CA)*.
41. M. Giovannozzi (1998). “New Transfer Line in the TT2 Tunnel for the Time-Of-Flight Neutron Facility at CERN-PS”, *CERN PS Note 98-23 (CA)*.
42. M. Giovannozzi, A. Jansson, M. Martini (1999). “Simultaneous matching of dispersion function and Twiss parameters in a transfer line”, *CERN PS/ Note 99-05 (CA)*.
43. G. Arduini, G. Crockford, C. Despas, M. Giovannozzi, K. Hanke, D. Manglunki, M. Martini, G. Métral, C. Niquille (1999). “Betatron and dispersion matching of the TT2/TT10 transfer line for the 26 GeV/c fast extraction”, *CERN PS Note 99-07 (CA)*.
44. G. Arduini, G. Crockford, M. Giovannozzi, K. Hanke, D. Manglunki, M. Martini, G. Métral, C. Niquille (1999). “TT2/TT10 transfer line studies for the 14 GeV/c continuous transfer”, *CERN PS Note 99-08 (CA)*.
45. G. Arduini, G. Crockford, M. Giovannozzi, K. Hanke, D. Manglunki, M. Martini, G. Métral, C. Niquille (1999). “Betatron and dispersion matching of the TT2/TT10 transfer line for the fixed-target lead ion beam”, *CERN PS Note 99-09 (CA)*.
46. M. Giovannozzi, M. Sassowsky (1999). “Sweeping Magnet for the Time Of Flight Facility at the CERN PS”, *CERN PS Note 99-12 (CA)*.

47. G. Arduini, R. Colchester, G. Ferioli, M. Giovannozzi, J-J. Gras, K. Hanke, D. J. Hopkins, R. Jung, D. Manglunki, M. Martini (1999). “Mismatch Measurement and Correction Tools for the PS-SPS Transfer of the 26 GeV/c LHC Beam”, *CERN PS Note 99-14 (CA)*.
48. M. Giovannozzi (1999). “Alternative Layout of the Transfer Line for the Time-Of-Flight Neutron Facility at CERN-PS”, *CERN PS Note 99-17 (CA)*.
49. A. Ball *et al.* (1999). “Preliminary Feasibility Study and Cost Evaluation for an Experiment of Neutrino Oscillations at CERN-PS”, *CERN PS Note 99-18 (CA)*.
50. L. Durieu, M. Giovannozzi, M. Martini, L. Zani (1999). “Design of an Extension of the T9 Beam Line for Hadron Production Study”, *CERN PS Note 99-27 (CA)*.
51. M. Giovannozzi, D. Manglunki (1999). “Proposal of a new Optics for the FTA Transfer Line”, *CERN PS Note 99-28 (CA)*.
52. B. Autin, M. Chanel, M. Giovannozzi, M. Martini (2000). “Analysis of Different Options for a High Intensity Proton Driver for Neutrino Factory”, *CERN PS Note 2000-001 (CA)*.
53. M. Giovannozzi, M. Martini (2001). “Transfer Line Between the Proton Driver Accumulator and Compressor Rings for the CERN Neutrino Factory”, *CERN PS Note 2001-001 (AE)*.
54. B. Autin, M. Giovannozzi, M. Martini, Ph. Royer (2001). “Varying the Path Length of Charged Particles Using Wiggler Modules”, *CERN PS Note 2001-002 (AE)*.
55. M. Benedikt *et al.* (2001). “Study of a New PSB-PS Transfer Line Optics with Improved Dispersion Matching by Means of Turn-by-Turn Beam Profile Acquisitions”, *CERN PS Note 2001-003 (AE)*.
56. R. Cappi, M. Giovannozzi (2001). “A Layout for a Muon Cooling Experiment at the CERN-PS: The Primary Proton Beam”, *CERN PS Note 2001-006 (AE)*.
57. C. Ball, M. Giovannozzi, V. Prieto, U. Raich (2001). “Measurement of Optical and Beam Parameters in the Transfer Line Towards the Decelerating RFQ”, *CERN PS Note 2001-017 (AE)*.
58. M. E. Angoletta, R. Cappi, M. Giovannozzi, M. Martini, E. Métral, G. Métral, A.-S. Müller, R. Steerenberg (2002). “First Experience with a new Multi-Turn Beam Position Acquisition and Analysis System of the PS”, *CERN PS Note 2002-083 (AE)*.
59. R. Cappi, M. Giovannozzi, M. Martini (2002). “Some scenarios for preliminary tests of the new CT extraction”, *CERN PS Note 2002-130 (AE)*.
60. M. Giovannozzi, M. Martini and A.-S. Müller (2002). “The transfer line joining the SPL and the Accumulator Ring for the CERN Neutrino Factory Scenario”, *CERN PS Note 2002-154 (AE)*.
61. G. Arduini, Y. Chao, M. Giovannozzi, J. Klem, D. Jacquet, D. Manglunki, M. Martini, G. Métral, F. Roncarolo (2003). “Summary of the TT2/TT10 transfer line studies in the years 2001 and 2002”, *AB Note 2003-086 (ABP)*.
62. G. Arduini, M. Giovannozzi, K. Hanke, M. Martini (2003). “Measurement of Twiss Parameters and Dispersion in the TT2/TT10 Transfer Line for Indium Ions”, *AB Note 2003-087 (OP)*.
63. O. E. Berrig, M. Giovannozzi, S. Russenschuck (2004). “Options for Improving the Octupoles Used for the Multi-Turn Extraction Studies”, *AB Note 2004-012 (ABP)*.
64. O. Brüning, S. Fartoukh, M. Giovannozzi, T. Risselada, (2004). “Dynamic Aperture Studies for the LHC Separation Dipoles”, *LHC Project Note 349*.
65. M. Giovannozzi, E. Métral, R. Steerenberg (2005). “PS 4-turn Continuous Transfer Extraction Test”, *AB-Note-2005-006*.
66. S. Fartoukh, M. Giovannozzi (2006). “Target values for the azimuthal misalignment of the LHC magnets”, *LHC-Project-Note-866*.
67. A. Franchi, G. Arduini, S. Gilardoni, M. Giovannozzi, E. Métral, J. Wenninger (2008). “Trajectory Correction in the Transfer Line TT2-TT10 for the Continuous Transfer (CT)”, *CERN-AB-Note-2008-005*.
68. I. Agapov *et al.* (2008). “The LHC Injection Tests” , *LHC-Performance-Note-001*.

69. M. Aiba, R. Calaga, A. Franchi, M. Giovannozzi, V. Kain, A. Morita, R. Tomás, G. Vanbavinckhove, J. Wenninger (2009). “First Beta-Beating Measurement in the LHC”, *LHC-Performance-Note-008*.
70. M. Aiba, S. Fartoukh, M. Giovannozzi, T. Risselada (2009). “Optics studies based on V6.503 nominal configuration”, *LHC-Project-Note-425*.
71. Y. Sun, B. Auchmann, S. Fartoukh, M. Giovannozzi, S. Russenschuck, R. Tomás, F. Zimmermann (2009). “Impact of CMS Stray Field on the Large Hadron Collider Beam Dynamics and Thin Solenoid in the SixTrack Code”, *LHC-Project-Note-426*.
72. M. Giovannozzi, A. Lachaize (2011). “Study of transverse beam splitting for multi-turn extraction for the CERN PS2 ring”, *CERN-ATS-Note-2011-015-TECH*.
73. S. Fartoukh *et al.* (2011). “The Achromatic Telescopic Squeezing (ATS) MD part I”, *CERN-ATS-Note-2011-033-MD*.
74. M. Albert, G. Crockford, S. Fartoukh, M. Giovannozzi, E. Maclean, A. MacPherson, R. Miyamoto, L. Ponce, S. Radaelli, F. Roncarolo, F. Schmidt, R. Steinhagen, E. Todesco, R. Tomás, G. Vanbavinckhove, W. Venturini Delsolaro, (2011). “Non-linear beam dynamics tests in the LHC”, *CERN-ATS-Note-2011-052-MD*.
75. S. Fartoukh *et al.* (2011). “The Achromatic Telescopic Squeezing (ATS) MD part II”, *CERN-ATS-Note-2011-060-MD*.
76. C. Alabau Pons, R. Assmann, R. Bruce, M. Giovannozzi, E. H. Maclean, G. Müller, S. Redaelli, F. Schmidt, R. Tomás, J. Wenninger (2011). “IR1 and IR5 aperture at 3.5 TeV”, *CERN-ATS-Note-2011-110 MD*.
77. R. Assmann *et al.* (2012). “Commissioning of the betatron squeeze to 1 m in IR1 and IR5”, *CERN-ATS-Note-2012-005 MD*.
78. C. Alabau Pons *et al.* (2012). “IR2 aperture measurements at 3.5 TeV”, *CERN-ATS-Note-2012-017 MD*.
79. M. Giovannozzi, F. Lang, R. De Maria (2012). “Investigations on the Scaling Law for Dynamic Aperture as a Function of Time”, *CERN-ATS-Note-2012-082 TECH*.
80. R. B. Appleby, M. Neat, M. Ferro-Luzzi, M. Giovannozzi, B. Holzer (2012). “VELO aperture considerations for the LHCb Upgrade”, *CERN-ATS-Note-2012-101 TECH*, *CERN-LHCb-PUB-2012-018*.
81. N. Hoimyr, *et al.* (2013). “BOINC service for volunteer cloud computing”, *CERN-IT-Note-2013-002*.
82. R. Bruce, M. Giovannozzi, P. D. Hermes, R. Redaelli, J. Wenninger (2013). “IR2 Aperture Measurements at 4.0 TeV”, *CERN-ACC-Note-2013-0011*.
83. T. Bach, *et al.* (2013). “Measurement of amplitude detuning at flat-top and beta star = 0.6 m using AC dipoles”, *CERN-ATS-Note-2013-015 MD*.
84. E. H. Maclean, M. Giovannozzi, T. Persson, R. Tomás, J. Wenninger (2013). “Understanding the tune, coupling, and chromaticity dependence of the LHC on Landau octupole powering”, *CERN-ATS-Note-2013-023 TECH*.
85. S. Cettour Cave *et al.* (2013). “Non-linear beam dynamics tests in the LHC: measurement of intensity decay for probing dynamic aperture at injection”, *CERN-ATS-Note-2013-025 MD*.
86. R. Bruce, M. Giovannozzi, P. D. Hermes, B. Holzer, A. A. Nosych, S. Redaelli, J. Wenninger (2013). “IR8 Aperture Measurements at injection energy”, *CERN-ATS-Note-2013-026 MD*.
87. M. Giovannozzi (2013). “Some considerations on the p-p performance of the LHC during Run I”, *CERN-ACC-Note-2013-0039*.
88. M. Fitterer, S. Bartolome-Jimenez, S. Chemli, R. De Maria, M. Giovannozzi (2014). “Status of the TAN aperture model in MAD-X”, *CERN-ACC-NOTE-2014-0026*.
89. G. Arduini *et al.* (2014). “PICs: what do we gain in beam performance”, *CERN-ACC-NOTE-2014-0071*.
90. G. Arduini *et al.* (2014). “How to maximize the HL-LHC performance (HL-LHC)?”, *CERN-ACC-NOTE-2014-0073*.
91. E. Métral *et al.* (2015). “HL-LHC Operational Scenarios”, *CERN-ACC-NOTE-2015-0009*.
92. R. Bruce *et al.* (2016). “Detailed IR aperture measurements”, *CERN-ACC-NOTE-2016-0075*.

93. L. R. Carver *et al.* (2017). “MD2013: Tune shift along the batch at flat top”, CERN-ACC-NOTE-2017-0011.
94. T. H.B. Persson *et al.* (2017). “Linear coupling dependence on intensity and a next step towards a feedback (MD1850)”, CERN-ACC-2017-0008.
95. E. Maclean *et al.* (2017). “Report from LHC MD 1399: Effect of linear coupling on nonlinear observables in the LHC”, CERN-ACC-NOTE-2017-0024.
96. E. Métral *et al.* (2018). “Update of the HL-LHC operational scenarios for proton operation”, CERN-ACC-NOTE-2018-0002.
97. E. Maclean *et al.* (2018). “Report from LHC MD 2158: IR-nonlinear studies”, CERN-ACC-NOTE-2018-0021.
98. E. Maclean *et al.* (2018). “Report from LHC MD 1391: First tests of the variation of amplitude detuning with crossing angle as an observable for high-order errors in low- β^* colliders”, CERN-ACC-NOTE-2018-0034.
99. E. Maclean *et al.* (2018). “Report from LHC MDs 1391 and 1483: Tests of new methods for study of nonlinear errors in the LHC experimental insertions”, CERN-ACC-NOTE-2018-0035.
100. E. Maclean, F. Carlier, M. Giovannozzi, R. Tomas Garcia (2018). “Report from LHC MD 2171: Dynamic aperture at 6.5 TeV”, CERN-ACC-NOTE-2018-0054.
101. C. Bloise, P. Campana, M. Giovannozzi, C. Milardi, N. Pastrone, A. Variola (2018). “Proposal for a possible use of DAFNE as an open infrastructure (DAFNE-TF) for the study of physics and innovative technologies for accelerators”, INFN-18-10-LNF.
102. C. Boscolo Meneguolo, R. Bruce, M. Ferro-Luzzi, M. Giovannozzi, S. Redaelli (2018). “Calculation of the allowed aperture for a gas storage cell in IP8”, CERN-PBC-Notes-2018-008.

Main scientific activities

Master thesis

The goal was to study the region of bounded motions of the 2D Hénon map and to determine its boundary by means of analytical techniques. The possibility of computing the border of the region where stable motions occur opens the possibility of finding methods to extend such a region. In terms of applications, given that the 2D Hénon map is a good model of non-linear betatronic motion, this study could help finding means of increasing the dynamic aperture of circular accelerators.

The solution was found using the concept of invariant manifolds. These are invariant sets related with hyperbolic fixed points of the dynamical system. It was possible to show that the boundary of the dynamic aperture is given by the inner envelope of the invariant manifolds emanating from hyperbolic fixed points those period is given by the order of the resonance that dominates the overall dynamics.

PhD thesis

Three topics were addressed, namely: the generalisation of the result obtained in the Master thesis dealing with the dynamic aperture of the 2D Hénon map and its relation with invariant manifolds; the analysis of correction schemes of the magnetic field errors in the LHC main dipoles using Normal Forms; the analysis of the experiments performed at the SPS to study the effect of power converter ripple on beam dynamics.

The focus of the studies performed has been slowly moving from the domain of classical dynamical systems to applications of non-linear dynamics to circular particle accelerators.

CERN Fellowship

As acting liaison physicist, support in the optics design and setting up of the transfer lines from the CERN Low Energy Antiproton Ring and the experimental South Hall was provided. Moreover, the complete design and beam commissioning of the new experimental area of the CERN Antiproton Decelerator ring had been started and successfully carried out.

In parallel, studies on non-linear beam dynamics were pursued, in particular in the domain of refined techniques to compute the transverse tunes in a circular machine as well as in the evaluation of the dynamic aperture for both simple models, such as the 4D Hénon map, as well as realistic models of the LHC lattice. These studies were aimed at the critical review of the algorithms used to compute numerically the dynamic aperture.

The main outcome of these activities was the observation that the dynamic aperture features a rather simple scaling law as a function of time that can be understood in terms of the two keystone theorems of dynamical systems theory, namely the Kolmogorov-Arnold-Moser and the Nekhoroshev theorems.

CERN Staff

At the beginning of the contract as a staff member, the activity was shifted to the PS machine and included also the role of PS machine supervisor. In this framework a key activity was the study and improvement of the optics of the transfer line joining the PS and SPS in order to mitigate possible injection mismatch effects in the SPS.

These studies evolved towards finding a replacement of the so-called Continuous Transfer (CT) extraction at the PS, in view of reducing or even suppressing the beam losses and the ring activation. This led to the proposal of using transverse beam splitting obtained by crossing a stable resonance as a means to perform multi-turn extraction from the PS.

I co-ordinated a study group in charge of the numerical studies and the experimental activities aimed at testing the theoretical proposal and assess its feasibility. After the positive outcome of the study group activities, a formal project was launched, with the mandate of pursuing the studies and of proposing an implementation scheme. This was successfully achieved in 2008, with the completion of the installation and of the hardware commissioning of the novel multi-turn extraction (MTE).

The beam commissioning started soon after and, following the conclusions of the MTE workshop in 2011, a second stage of the project was launched, with the mandate of finding mitigation measures to the issues observed during the short operational period during the 2010 proton run.

The efforts continued with the proposal, design, installation, and commissioning of a so-called dummy septum in the PS, which was achieved after the Long Shutdown 1. Finally, the full operational state of MTE was reached at the end of 2015. Since then, several studies were performed to assess the suitability of MTE for high-intensity beams, in view of future fixed target experiments, such a SHiP. The successful outcome of the experimental campaigns culminated in the decision to remove the hardware for CT installed in the PS ring and by the next PS start-up in 2020 after the Long Shutdown 2, MTE will be the unique means of extraction of proton beams for SPS fixed target experiments.

In parallel, since 2005 when I was appointed leader of the LHC Optics and Commissioning section of the Accelerator Beam Physics Group, I resumed the activity on LHC after the partial stop during the fellowship contract.

I joined the LHC Magnet Evaluation Board (MEB), and I was in charge of assigning the most appropriate slot in the LHC tunnel of all insertion magnets (dipoles and quadrupoles). The proposal of the suitable slot is based on the detailed analysis of the mechanical, geometrical, and magnetic properties of each single magnet. In a second stage, I was also appointed scientific secretary of the MEB, role that I kept until the end of the formal activities of the board.

Note that due to the planned replacement of some main dipoles and quadrupoles during the Long Shutdown 1, I provided support for the selection of the replacement magnets, thus broadening my initial responsibility beyond insertion magnets. Moreover, the recent extension of the MEB mandate to cover also the selection and slot allocation of the new magnets for the LHC luminosity upgrade, implies that I will be involved also in the MEB activities in the coming years.

The activity on non-linear beam dynamics applied to the study of the single-particle effects in the LHC was pursued. Detailed analysis of the dynamic aperture and of its dependence on the field quality of the various magnets classes has been performed throughout the whole period of magnets' acceptance at the MEB. The huge amount of data from the magnetic field measurements has been used to provide accurate estimates of the dynamic aperture for the LHC using the best description of the machine.

On the theoretical side, the analysis of non-linear beam dynamics in the LHC culminated with the proposal of a scaling law of the beam intensity as a function of time based on the results about the scaling law of the dynamic aperture vs. time. This proposal has been successfully verified experimentally and is the basis for a new method to measure the dynamic aperture under study in the LHC. The ultimate goal is to carry out a direct comparison between measurements and numerical simulations.

The activity of section leader continued through the years, with changes to the mandate of the section, whose focus shifted from LHC and the preparation of its commissioning, to LHC and its upgrade, and currently covers all single-particle effects for all CERN hadron synchrotrons.

Note that in 2010 I made the proposal of increasing the extraction energy of the PSB in view of mitigating space charge effects at injection in the PS ring. This allows improving the overall performance of the LHC injectors' chain and such a proposal is now part of the LIU project.

More recently, a leading role in LHC operation was added, starting in 2008, when, as an appointed commissioner in charge I took part in the specification of the beam commissioning process as well as some of the beam measurements. Finally, in 2014 I was appointed LHC machine co-ordinator until end of 2017.

The recent activities are based on a two-prong research programme: novel techniques of beam manipulation by means of non-linear effects, which are combined with experimental activities on the PS synchrotron; study diffusive models suitable to describe the non-linear beam dynamics in the LHC as an alternative path to the research carried out in the vast domain of dynamic aperture. An example of the first activity is the recent set of tests carried out with barrier bucket to further reduce extraction losses for the PS Multi-Turn Extraction, and the studies on alternative means to perform beam splitting using AC dipoles. An example of the latter is the analysis of measurements carried out at top energy in the LHC by means of a new diffusion model and the analysis of the relationship between the scaling laws of the dynamic aperture, the form of the diffusion coefficient for Hamiltonian systems representing circular accelerators, and the stability time estimate of Nekhoroshev theorem.

Supervision of students and postdocs

CERN Summer students

- Nine students have been supervised on topics covering multi-turn extraction (theory and numerical simulations); LHC dynamic aperture studies (determination of novel models for the dynamic aperture vs. time); refined methods of tune computation.

CERN Trainees

- Four students have been supervised covering different multi-turn extraction aspects: theory, analysis of experimental results, space charge effects, multi-turn injection.
- One student has been supervised on new models for describing the time evolution of dynamic aperture.

Master students

- R. Grassi, “Strategie di ordinamento dei magneti di LHC in presenza di errori multipolari”. Supervisor: Prof. G. Turchetti. Co-supervisors: M. Giovannozzi and E. Todesco, University of Bologna, Academic year 1995-1996.
- P. Scaramuzzi, “Studio di una nuova tecnica per estrarre fasci di particelle cariche da un acceleratore circolare usando risonanze stabili dello spazio delle fasi trasversale”, Supervisor: Prof. G. Bellomo. Co-supervisor: M. Giovannozzi, University of Milan, Academic year 2003-2004.
- D. Quatraro, “Utilizzo delle forme normali per l'estrazione multi giri da PS ad SPS”. Supervisor: Prof. G. Turchetti. Co-supervisor: M. Giovannozzi, University of Bologna, Academic year 2006-2007.
- C. Hernalsteens, “Analytical and numerical studies of transverse beam splitting used for the CERNPS Multi-Turn Extraction”, Supervisor: Prof. A. Dubus. Co-supervisors: M. Giovannozzi and D. Manglunki, Université libre de Bruxelles, Academic year 2010-2011.
- F. Capoani, “Adiabatic theory for slowly varying Hamiltonian systems with applications to beam dynamics”. Supervisor: Prof. A. Bazzani. Co-supervisor: M. Giovannozzi, University of Bologna, Academic year 2017-2018.
- C.E. Montanari, “Diffusive approach for non-linear beam dynamics in a circular accelerator”. Supervisor: Prof. A. Bazzani. Co-supervisor: M. Giovannozzi, University of Bologna, Academic year 2018-2019.

PhD students

- C. Hernalsteens, “Transverse splitting of charged particle beams as new manipulation tool in circular particle accelerators”, Supervisor: Prof. L. Rivkin. Co-supervisor: M. Giovannozzi, École Polytechnique Fédérale de Lausanne, to be completed in the academic year 2015-2016.
- S. Hirlander, “Review of image effects in circular accelerators with applications to CERN LHC and PS”, Supervisor: Prof. M. Benedikt. Co-supervisor: M. Giovannozzi, Vienna University of Technology, to be completed in the academic year 2015-2016.

CERN Fellows

- Four postdocs have been supervised on topics covering different aspects of multi-turn extraction: theory, experimental part, and implementation in future machines, such as the PS2.
- Two postdocs have been co-supervised on topics related with studies for the high-luminosity upgrade of the LHC.

Seminars and oral contributions to international conferences and workshops

- October 1992 - Upton (NY-USA), *Workshop on Stability of Particle Motion in Storage Rings*: “Invariant manifolds and stability.”
- October 1992 - Upton (NY-USA), *Workshop on Stability of Particle Motion in Storage Rings*: “LHC correction scheme.”
- January 1994 - CERN, Group seminar: “Simulations for the SPS experiment on diffusion”.
- March 1994 - CERN, Group seminar: “Normal Forms and accelerator physics”.
- October 1995 - Montreux (Switzerland), conference *LHC95: Single Particle Effects in Large Hadron Colliders*: “Numerical methods to estimate the dynamic aperture”.
- December 1995 - Madrid (Spain), Universidad Complutense, Group seminar: “Early indicators of long-term stability”.
- May 1996 - Lausanne (Switzerland), École Polytechnique Fédéral, Département de Matématique, Department seminar: “Normal Forms for Hamiltonian maps: theory and applications to accelerator physics”.
- May 1996 - GSI, Group seminar: “Applications of nonlinear dynamics tools to accelerator physics”.
- September 1996 - Madrid (Spain), Conference *Supercomputation in Nonlinear and Disordered Systems: Algorithms, Applications and Architectures*: “Evaluation of the dynamic aperture of the CERN-LHC using fast indicators of long-term stability”.
- November 1997 - Geneva (Switzerland), Workshop *4th ICFA Beam Dynamics Mini-Workshop on Transverse Emittance Preservation and Measurements*: “Nonlinear Fields at extraction”.
- November 1997 - Geneva (Switzerland), Workshop *4th ICFA Beam Dynamics Mini-Workshop on Transverse Emittance Preservation and Measurements*: “Multi-grid measurements in a transfer line”.
- February 2001 - London (England), *Workshop on Instrumentation for Muon Cooling Studies*: “A layout for a muon test facility at the CERN-PS: the primary proton beam”.
- February 2001 - London (England), *Workshop on Instrumentation for Muon Cooling Studies*: “The standard approach to measure beam emittance in a transfer line”.
- October 2002 - Brookhaven National Laboratory (NY - USA), *10th ICFA Mini-Workshop on Slow Extraction*: “Multiturn Extraction Using Adiabatic Capture in Islands of Transverse Phase Space: Theoretical Predictions and Preliminary Measurements Results”.
- October 2002 - Greenbelt (MD - USA), *2002 Charged Particle Optics Conference*: “Multiturn Extraction: Performance Analysis of Old and New Approaches”.
- May 2003 - PAC2003, contributed talk: “Adiabatic Beam Trapping in Stable Islands of Transverse Phase Space: Measurement Results at CERN Proton Synchrotron”.
- May 2003 - HALO’03, invited talk: “Dynamic Aperture for Single-Particle Motion: Overview of Theoretical Background, Numerical Predictions and Experimental Results”.
- April 2004 - ISS, Forschungszentrum Karlsruhe, *ANKA Seminar*: “A novel approach to multi-turn extraction: adiabatic capture in stable islands of transverse phase space”.
- July 2004 - EPAC 2004, contributed talk: “Multiturn Extraction Based on Trapping in Stable Islands at CERN PS: Recent Measurement Advances”.
- September 2004 - AB Seminar: “Recent results of the studies for a novel multi-turn extraction at the CERN PS”.
- October 2004 - 33rd ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams, invited talk: “Multiturn Extraction Based on Trapping in Stable Islands”.
- October 2004 - HHH 2004, First CARE-HHH-APD Workshop on Beam Dynamics in Future Hadron Colliders and Rapidly Cycling High-Intensity Synchrotrons, invited talk: “Multiturn extraction and injection using stable resonances”.

- December 2004 - Bologna University INFN Section Seminar: “A novel approach to multiturn extraction from a circular particle accelerator: beam trapping in stable islands of transverse phase space”.
- May 2005 - Conference PAC05, invited talk: “Final Results from the Novel Multi-turn Extraction Studies at CERN Proton Synchrotron”.
- September 2005 - Workshop COULOMB’05, invited talk: “Resonant multi-turn extraction: principle and experiments”.
- May 2006 - Workshop HB2006, invited talk: “Design and Tests of a Low-Loss Multi-Turn Ejection for the CERN PS”.
- June 2007 - Conference PAC07, contributed talk: “Magnet acceptance and allocation at the LHC Magnet Evaluation Board”.
- June 2007 - Fermilab, Accelerator physics and technology seminar: “Resonant multi-turn extraction project: principle and experiments at the CERN Proton Synchrotron”.
- November 2007 - Workshop IR07, invited talk: “Optics issues for phase-1 and phase-2 upgrades”.
- January 2008 - Symposium for the 65th anniversary of Giorgio Turchetti, invited talk: “The use of resonances for multi-turn beam extraction from circular accelerators”.
- February 2008 - Seminaire de la Société Française de Physique: “Le Large Hadron Collider (LHC) : le futur collisionneur de particules du CERN”.
- May 2008 - Invited talk at “La 16^{ème} rencontre de prospectives du LAL”: “LHC: La machine”.
- May 2010 - IPAC10, contributed talk: “Results from the 2009 Beam Commissioning of the CERN Multi-turn Extraction”.
- May 2012 - Invited talk at “Eleventh Conference on the Intersections of Particle and Nuclear Physics”: “The CERN LHC machine: current status and future upgrade plans”.
- October 2012 - Seminar of the accelerator division at Frascati National Laboratories: “Dynamic aperture studies for LHC and its upgrade”.
- May 2013 - Physics colloquium of the University of Graz and the Graz University of Technology: “Controlling non-linear effects in circular particle accelerators and the dynamic aperture saga: the case of the CERN LHC”.
- May 2013 - Special seminar of the Graz University of Technology: “Using non-linear effects to manipulate beams in circular accelerators: beam splitting by particles’ trapping into resonance islands”.
- July 2013 - Seminar of the John Adams Institute - Oxford: “Manipulation of transverse beam distribution in circular accelerators: beam splitting by particles? trapping into resonance islands”.
- November 2013 - Fermilab, Accelerator physics and technology seminar: “The LHC dynamic aperture saga: overview, ideas and recent developments”.
- November 2013 - Invited talk at “2013 US LHC Users Organisation Annual Meeting”: “Status and Outlook of the LHC”.
- December 2013 - Invited talk at “Beam Dynamics meets Magnets” Workshop: “Sorting of the LHC magnets and lessons learnt”.
- February 2014 - Bologna University, Physics Dept.: “Non-linear Beam Dynamics in Particle Accelerators: Friend or Foe?”.
- September 2015 - CMS week, Ischia - Italy: “LHC status and perspectives”.
- September 2015 - LHCb week, Bologna - Italy: “LHC status and prospects for Run II”.
- January 2016 - ASTeC/ISIS seminar: “Recent progress with Multi-Turn Extraction at CERN PS and possible future applications of stable islands in circular machines”.
- February 2016 - Bologna University, Physics Dept. Bologna University: “LHC status and prospects for Run II and beyond”.

- June 2016 - The slow extraction Workshop, invited talk: “Resonant extraction: review of principles and experimental results”.
- October 2016 - 14th Topical Seminar on Innovative Particle and Radiation Detectors (IPRD16), invited talk: “High Luminosity LHC”.
- February 2017 - EuCARD-2 XBEAM Strategy Workshop, invited talk: “Using Resonance Islands for Optimum Performance and Advanced Commissioning Techniques”.
- September 2017 - International ICFA mini-Workshop on Nonlinear dynamics and collective effects in particle beam physics (NOCE 2017), invited talk: “Could synchrotron light sources benefit from experience with beams split at CERN?”.
- December 2018 - LNF Accelerator Division Seminar: “Could synchrotron light sources benefit from the CERN experience with beams split in horizontal phase space?”.
- November 2019 - Seminars and Journal Clubs, Center for Cosmology, Particle Physics and Phenomenology, Louvaine-la-Neuve: “Current situation and prospects for accelerator upgrades at CERN”.
- November 2019 - Invited talk at the TRIBs Controlroom Workshop at BESSY II, Berlin: “Transverse beam splitting - Cern applications and other ideas”.
- February 2020 - Invited talk at the Kickoff workshop for a dedicated muon EDM search using the frozen spin technique at PSI: “Novel techniques for injecting or extracting beams from a circular ring”.

Courses

- January 1999 - PS/OP Shutdown Lectures: “AD Experimental Area”.
- February 1999 - PS/OP Shutdown Lectures: “The new T8 beam line in the East Area”.
- February 1999 - PS/OP Shutdown Lectures: “Beam sharing in the East Area”.
- October 2005 - CERN Accelerator School - Intermediate Course, Lecture: “Sources of emittance growth”.
- July 2007 - First French-Ukrainian Summer School of Particle Physics - Lecture: “The LHC machine”.
- March 2008 - AB OP Shutdown Courses: “PS MTE principle and measurements until 2007”.
- November 2008 - Seminar in the framework of the course “Introduction to accelerator physics” - LAL Orsay: “The CERN LHC machine”.
- June 2009 - Seminar in the framework of the event “Nuit des Sciences” - Collège St. Louis - Corsier (GE): “La physique des Particules et le LHC”.
- October 2009 - CERN Accelerator School - Intermediate Course, Lecture: “Sources of emittance growth”.
- July 2010 - Trans-European School of High Energy Physics - Lecture: “The LHC machine”.
- November 2010 - Seminar in the framework of the Nuclei Particles Astrophysics Cosmology Master Degree Course “Introduction to accelerator physics” - LAL Orsay: “The CERN LHC machine”.
- August 2011 - Ecole de physique des Houches - La physique théorique face au défi du LHC, Lecture: “The LHC machine: commissioning and operation”.
- August 2011 - Ecole de physique des Houches - La physique théorique face au défi du LHC, Lecture: “The LHC machine: prospects”.
- September 2011 - CERN Accelerator School - Intermediate Course, Lecture: “Sources of emittance growth”.
- October 2011 - Seminar in the framework of the Nuclei Particles Astrophysics Cosmology Master Degree Course “Introduction to accelerator physics” - LAL Orsay: “The CERN LHC machine”.
- July 2012 - Seminar in the framework of the “Rencontres de l’infiniment grand à l’infiniment petit 2012: Promotion Ettore Majorana”: “The CERN LHC machine: a Higgs factory”.