CURRICULUM VITAE

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PERSONAL DATA

Birthday: *September 13th, 1957*
Place of Birth: *Erlangen, Germany*
Citizenship: *German*
Marital Status: *married*
Languages: *German, English, Spanish, Italian, French.*

Home Address:

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ACADEMIC CURRICULUM

November 1978 - July 1981
Undergraduate studies in Physics, Mathematics, and Music at Regensburg University, Germany.

February 1981
Vordiplom in Physics at Regensburg University.

July 1981
Vordiplom in Mathematics at Regensburg University.

November 1981 - February 1985
Teaching Assistant at the Department of Mathematics, Regensburg University.

October 1985
Diplom in Mathematics at the University of Regensburg, with a Thesis on "The Local Atiyah-Singer Index Theorem for the Dirac Operator and its application to the Calculation of the Axial Anomaly", under the supervision of Prof. W. Hackenbroch.

November 1985 - September 1989
PhD Student at MPI für Physik und Astrophysik, Werner-Heisenberg-Institut für Physik, München, Germany. Graduation "mit Auszeichnung" at Technische Universität München in June 1989, with a Thesis on "The γ_5-Problem of Dimensional Renormalization Studied for the Example of the Yukawa Model", under the supervision of Prof. P. Breitenlohner.

October 1989 - March 1991
Postdoctoral Associate at the Center for Theoretical Physics, Laboratory of Nuclear Science, Massachusetts Institute of Technology, Boston.

April 1991 - December 1993
Postdoctoral Fellow at the Institut für Theoretische Physik, Universität Heidelberg.

January 1992 - April 1992
Visiting Scientist at the TATA Institute of Fundamental Research, Bombay.

May 1992 - December 1993
Postdoctoral Fellow at the Institut für Theoretische Physik, Universität Heidelberg.

January 1994 – December 1994
Postdoctoral Fellow at DESY - IfH Zeuthen.

May 1–31, 1994
Visiting appointment at the CERN Theory Division.

January 1, 1995 – September 30, 1997
DFG Habilitation Fellow at the Institut für Physik, Humboldt – Universität Berlin.

February 1 – 28, 1995
Visiting CRN Strasbourg and Université Louis Pasteur Strasbourg, France, on a "Professeur Invité" appointment.

March 9 – June 7, 1995
Visiting the Physics Department of the University of California at Los Angeles.

June 20 – July 13, 1995
Visiting the Physics Department of Heidelberg University, on a lecturing appointment.

August 21 – September 11, 1995
Visiting the Institute for Advanced Study, School of Natural Sciences, Princeton.

July 15, 1998
Habilitation at Humboldt Universität Berlin, with a thesis on "The Worldline Path Integral Approach to the Bern-Kosower Formalism".

August 1 – August 31, 1997
Visiting appointment at the CERN Theory Division.

October 1 – December 31, 1997
Staff member at the HEP Division, Argonne National Laboratory, USA.

January 1, 1998 – September 30, 2000
Research Associate at Laboratoire d'Annecy-le-Vieux de Physique des Particules, France.

May 1 – May 31, 2000
Visiting appointment at the CERN Theory Division.

October 1, 2000 – December 31, 2002
Professor of Physics at Institute of Physics and Mathematics, Michoacan University, Morelia, Michoacan, Mexico.

January 1, 2003 – August 31, 2005
Assistant Professor (tenure track) at Department of Physics and Geology, University of Texas Pan American, Edinburg, US.

September 1, 2005 - October 31, 2021
Full Professor of Physics (tenured) at Institute of Physics and Mathematics, Michoacan University, Morelia, Michoacan, Mexico.

November 1, 2021 - October 31, 2022
Invited Professor at Centro Internacional de Ciencias A.C., Campus UNAM-UAEM, Cuernavaca, Morelos, Mexico.

September 15, 2022 - May 15, 2023
Senior Scientist at Extreme Light Infrastructure Beamlines, Dolni Brezany, Czech Republic.

May 16 - September 30, 2023
Full Professor of Physics (tenured) at Institute of Physics and Mathematics, Michoacan University, Morelia, Michoacan, Mexico.

Since October 1, 2023
Full Professor of Physics (tenured) at Facultad de Ciencias Físico Matemáticas. Michoacan University, Morelia, Michoacan, Mexico.

PUBLICATIONS

1. The Local Atiyah-Singer Index Theorem for the Dirac Operator and its Application to the Calculation of the Chiral Anomaly
Author: C. Schubert,
Diplom thesis in Mathematics, Regensburg University, 1985.

2. The γ_5–Problem of Dimensional Renormalization, studied for the Example of the Yukawa Model
Author: C. Schubert,
Doctoral thesis in Physics, Technical University Munich, 1989.

3. The Yukawa Model as an Example for Dimensional Renormalization with a γ_5
Author: C. Schubert,
MPI-PAE/PTh-69/88, publ. in *Nucl. Phys.* **B 323** (1989) 478-492.

4. The Finite Gauge Transformations in Closed String Field Theory
Author: C. Schubert,
MIT-CTP-1977, publ. in *Lett. Math. Phys.* **26** (1992) 259-264.

5. On the Calculation of Effective Actions by String Methods
Authors: M. G. Schmidt and C. Schubert,
HD-THEP-93-24, publ. in *Phys. Lett.* **B 318** (1993) 438-446.

6. The Higher Derivative Expansion of the Effective Action by the String-inspired Method: Part I
Authors: D. Fliegner, M.G. Schmidt, and C. Schubert,
HD-THEP-93-44, publ. in *Zeitschr. für Physik* **C 64** (1994) 111-116.

7. On the γ_5 – Problem of Dimensional Renormalization
Author: C. Schubert, HD-THEP-93-46, 10 pp.

8. Worldline Green Functions for Multiloop Diagrams
Authors: M.G. Schmidt and C. Schubert,
HD-THEP-94-7, publ. in *Phys. Lett.* **B 331** (1994) 69-76.

9. An Improved Heat Kernel Expansion from Worldline Path Integrals
Authors: D. Fliegner, P. Haberl, M.G. Schmidt, and C. Schubert,
DESY-94-221, HD-THEP-94-26,
publ. in *Discourses in Mathematics and its Applications, No. 4, 87-99, Ed. S.A. Fulling, Texas A&M University 1995.*

10. Multiloop Calculations in QED by Superparticle Path Integrals
Authors: M.G. Schmidt and C. Schubert,
HD-THEP-94-32, publ. in Proceedings of *QCD 94*, Montpellier 1994,
Nucl. Phys. **B** (Proc. Suppl.) 39B, C (1995) 306-308.

11. The Worldline Path Integral Approach to Feynman Diagrams
Authors: M.G. Schmidt and C. Schubert,
HD-THEP-94-33A,
publ. in Proceedings of *28th International Symposium Arenshoop on the Theory of Elementary Particles*, 240-253, DESY – IfH 1995,

12. Yukawa Couplings for the Spinning Particle and the Worldline Formalism
Authors: M. Mondragón, L. Nellen, M. G. Schmidt, and C. Schubert,
HD-THEP-94-5, DESY 95-034, publ. in *Phys. Lett.* **B 351** (1995) 200-205.

13. Yukawa Couplings in the World-Line Formalism
Authors: M. Mondragón, L. Nellen, M. G. Schmidt, and C. Schubert,
Proceedings of *6th Mexican School of Particles and Fields,* Tabasco, Mexico,
3 – 7 October 1994, pp. 338-344, Eds. J.C. D'Olivo, M. Moreno, M.A. Perez,
World Scientific, 1995.

14. Inverse Mass Expansions from Worldline Path Integrals - Higher Order Coefficients and Ordering Problems
Authors: D. Fliegner, P. Haberl, M. G. Schmidt, and C. Schubert,
HD-THEP-95-20, publ. in *New Computing Techniques in Physics Research IV (Proceedings of the Fourth International Workshop on Software Engineering, Artificial Intelligence and Expert Systems for High Energy and Nuclear Physics, Pisa, Italy, 3 – 8 April 1995),* pp 199 - 204, World Scientific, 1996.

15. Multiloop Calculations in the String-Inspired Formalism: The Single Spinor-Loop in QED
Authors: M.G. Schmidt and C. Schubert,
HD-THEP-94-25, DESY-94-189, publ. in *Phys. Rev.* **D 53** (1996) 2150-2159.

16. Axial Couplings on the Worldline
Authors: M. Mondragón, L. Nellen, M. G. Schmidt, and C. Schubert,
IASSNS-HEP-95-74, HD-THEP-95-43, HUB-EP-95/17,
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17. Photon Splitting in a Strong Magnetic Field: Recalculation and Comparison with Previous Calculations
Authors: S.L. Adler and C. Schubert,
IASSNS-HEP-96-37, publ. in *Phys. Rev. Lett.* **77** (1996) 1695-1698.

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IASSNS-HEP-96/90, DESY 96-225, HD-THEP-96/17, HUB-EP-96/13,
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Authors: D. Fliegner, M.G. Schmidt, and C. Schubert,
HD-THEP-96-18, HUB-EP-96/19,
publ. in Proceedings of *DESY Workshop on QCD and QED in higher orders, Rheinsberg 1996*, *Nucl. Phys.* **B** (Proc. Suppl.) 51C (1996) 174 - 179.

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Authors: M.G. Schmidt and C. Schubert,
HD-THEP-96-43, HUB-EP-96/28,
publ. in Proceedings of the *Dubna Joint Meeting: International Seminar on Path Integrals: Theory and Applications, and 5th International Conference on Path Integrals from meV to MeV, Dubna 1996, Ed. V. S. Yarunin, M. A. Smondyrev* 171 - 176.

21. Multiloop Feynman Integrals in the Worldline Approach
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HD-THEP-96-44, HUB-EP-96/29,
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22. An Introduction to the Worldline Technique for QFT Calculations
Author: C. Schubert,
HUB-EP-96/30,
publ. in Proceedings of *XXXVI School of Theoretical Physics, Zakopane, Poland, June 1 - 10, 1996*, *Act. Phys. Pol.* **B 27** (1996) 3965 - 4001.

23. Application of the Worldline Path Integral Method to the Calculation of Inverse Mass Expansions
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HUB-EP-96/57, HUB-EP-96/57,
publ. in Proceedings of *AIHENP'96, New Computing Techniques in Physics Research, Lausanne, Sept. 2-6, 1996*, *Nucl. Instrum. Meth.* **A 389** *(1997) 374-377.*

24. The Two-Loop Euler-Heisenberg Lagrangian in Dimensional Renormalization
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25. The Higher Derivative Expansion of the Effective Action by the String-inspired Method: Part II
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26. The Structure of the Bern – Kosower Integrand for the N – Gluon Amplitude
Author: C. Schubert,
ANL-HEP-PR-97-83, 12pp,
publ. in *Eur. Phys. J.* **C5** (1998) 693 - 699, DOI 10.1007/s100529800877.

27. The World Line Path Integral Approach to the Bern – Kosower Formalism
Author: C. Schubert,
Habilitation thesis, Humboldt University Berlin, 146pp, July 1997.

28. A Closed Formula for the Riemann Normal Coordinate Expansion
Authors: U. Müller, C. Schubert and A. van de Ven,
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publ. in *Gen. Rel. Grav.* **31** (1999), Vol. 11, 1759-1768.

29. A New Approach to Axial Vector Model Calculations
Author: D.G.C. McKeon and C. Schubert,
LAPTH-686-98, 9pp,
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31. World Line Path Integrals as a Calculational Tool in Quantum Field Theory
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32. Four-Point Functions in N = 4 supersymmetric Yang-Mills Theory at two Loops
Authors: B. Eden, P.S. Howe, C. Schubert, E. Sokatchev, and P. West,
LAPTH-705-98, KCL-MTH-98-58, 26pp,
publ. in *Nucl. Phys.* **B557** (1999) 355-379.

33. A New Approach to Axial Vector Model Calculations, Part 2
Authors: F.A. Dilkes, D.G.C. McKeon, and C. Schubert,
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34. A Quantum Field Theoretical Representation of Euler-Zagier Sums
Authors: U. Müller and C. Schubert,
LAPTH-728/99, 28pp,
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35. Axial Vector Amplitudes, Second Order Fermions, and Standard Model Photon-Neutrino Processes
Author: C. Schubert,
LAPTH-729/99, 13 pages, publ. in the proceedings of *Corfu Summer Institute on Elementary Particle Physics*, Corfu 1998, *Proc. High Energy Phys.* – corfu98/02.

36. Simplifications of Four-Point Functions in N = 4 Supersymmetric Yang-Mills Theory at two Loops
Authors: B. Eden, P.S.Howe, C. Schubert, E. Sokatchev, and P.C. West,
LAPTH-735-99, KCL-MTH-99-22, 9pp, published in *Phys. Lett.* **B466** (1999) 20 - 26.

37. Two-Loop Euler-Heisenberg QED Pair - Production Rate
Authors: G.V. Dunne and C. Schubert,
LAPTH-739-99, 12pp, published in *Nucl. Phys.* **B564** (2000) 591 - 604.

38. Explicit Construction of Nilpotent Covariants in $N = 4$ SYM
Authors: P.S.Howe, C. Schubert, E. Sokatchev, and P.C. West,
KCL-MTH-99-41, LAPTH-746/99, 20pp,
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39. Extremal Correlators in Four-dimensional SCFT
Authors: B. Eden, P.S. Howe, C. Schubert, E. Sokatchev, and P.C. West,
IASSNS-HEP-99-93, KCL-MTH-99-44, LAPTH-754/99, 12pp,
publ. in *Phys. Lett.* **B472** (2000) 323-331.

40. Vacuum Polarisation Tensors in Constant Electromagnetic Fields, Part I
Author: C. Schubert,
LAPTH-758/99, 34pp,
publ. in *Nucl. Phys.* **B 585** (2000) 407-428.

41. Perturbative Quantum Field Theory in the String-inspired Formalism
Author: C. Schubert,
LAPTH-761/99, 173pp,
publ. in *Phys. Rep.* **355/2-3** (2001) 73 – 234.

42. Vacuum Polarisation Tensors in Constant Electromagnetic Fields, Part II
Author: C. Schubert,
LAPTH-783/2000, 18pp,
publ. in *Nucl. Phys.* **B 585** (2000) 429-442.

43. Three-Loop Four-Point Correlator in $N = 4$ SYM
Authors: B. Eden, C. Schubert, and E. Sokatchev,
LAPTH-786/2000, 8pp,
publ. in *Phys. Lett.* **B482** (2000) 309 – 314.

44. Partial Non-Renormalisation of the Stress-Tensor Four-Point Function in N=4 SYM and AdS/CFT
Authors: B. Eden, A. Petkou, C. Schubert, and E. Sokatchev,
LAPTH-811/2000, KL-TH 00/06, 21pp,
publ. in *Nucl. Phys.* **B 607** (2001) 191 – 212.

45. Four – Point Functions of Chiral Primary Operators in $N = 4$ SYM
Authors: B. Eden, C. Schubert, and E. Sokatchev,
LAPTH-Conf-814/99, 6pp, publ. in the proceedings of
Quantization, Gauge Theory, and Strings, International Conference dedicated to the memory of Professor Efim Fradkin, Moscow, June 5 – 10, 2000, Editors: A. Semikhatov, M. Vasiliev, V. Zaikin, Volume II, 178-184, Scientific World Publ. Co., Moscow 2001.

46. QED in the Worldline Formalism
Author: C. Schubert,
publ. in Proceedings of the 2nd workshop on
Frontier Tests of Quantum Electrodynamics and Physics of the Vacuum, Trieste, Italy, October 5-11, 2000, AIP Conference Proceedings, Vol. 564, 28 – 36, American Institute of Physics, Melville, 2001.

47. Vacuum Polarisation Tensors in Constant Electromagnetic Fields, Part III
Authors: H. Gies and C. Schubert,
CERN-TH/2001-097, UMSNH-Phys/01-4, 12 pp,
publ. in *Nucl. Phys.* **B 609** (2001) 313 – 324.

48. Calculation of 1-loop Hexagon Amplitudes in the Yukawa Model
Authors: T. Binoth, J. Ph. Guillet, G. Heinrich, and C. Schubert,
Edinburgh 2001/07, LAPTH-853/01, LPT-Orsay 01-55, UMSNH-PHYS/01-7, 13 pp, publ. in *Nucl. Phys.* **B 615** (2001) 385 – 401.

49. Two-loop Euler-Heisenberg Lagrangians and Borel Analysis
Authors: G.V. Dunne and C. Schubert,
UMSNH-Phys/01-10, 4 pp, publ. in Proceedings of *Fifth workshop on quantum field theory under the influence of external conditions*, Leipzig University, September 10–14, 2001, *Int. J. Mod. Phys.* **A 17**, Nos. 6 & 7 (2002) 956 – 959.

50. Closed-form two-loop Euler-Heisenberg Lagrangian in self-dual background
Authors: G.V. Dunne and C. Schubert,
UMSNH-Phys/01-9, 8 pp,
publ. in *Phys. Lett.* **B 526** (2002) 55-60.

51. Two-loop self-dual Euler-Heisenberg Lagrangians (I): real part and helicity amplitudes
Authors: G.V. Dunne and C. Schubert,
Preprint BUCMP/02-03, UMSNH-Phys/02-6, 24 pp,
publ. in *J. High Energy Phys.* **0208** (2002) 053.

52. Two-loop self-dual Euler-Heisenberg Lagrangians (II): imaginary part and Borel analysis
Authos: G.V. Dunne and C. Schubert,
Preprint BUCMP/02-04, UMSNH-Phys/02-7, 28 pp,
publ. in *J. High Energy Phys.* **0206** (2002) 042.

53. Supersymmetry in Anti de Sitter Space
Authors: D.G.C. McKeon, C. Schubert, and T.N. Sherry,
UMSNH-Phys/02-9, 7 pp, published in
Proceedings of the *SUNY Institute of Technology Conference on Theoretical High Energy Physics*, SUNY Institute of Technology at Utica/Rome, June 6, 2002, pp 87 – 94. Edited by M.R. Ahmady and A.H. Fariborz, NRC Research Press, National Research Council of Canada, Ottawa.

54. Two-loop Self-dual QED
Authors: G.V. Dunne and C. Schubert,
UMSNH-Phys/02-11, 12 pp,
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55. Zero modes, Beta functions and IR/UV Interplay in Higher-Loop QED
Authors: G.V. Dunne, H. Gies, and C. Schubert,
CERN-TH/2002-252, UMSNH-Phys/02-10, 15 pp,
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56. On the Low Energy Limit of the QED N Photon Amplitudes
Authors: L.C. Martin, C. Schubert, and V.M. Villanueva Sandoval,
UMSNH-Phys/02-13, 15 pp,
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57. Supersymmetry on AdS3 and AdS4
Authors: D.G.C. McKeon and C. Schubert,
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58. Self-Duality, Helicity and Higher-Loop Euler-Heisenberg Effective Actions
Authors: G.V. Dunne and C. Schubert,
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IHES-P-04-31, 17 pp,
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Authors: F. Bastianelli and C. Schubert,
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Authors: G.V. Dunne and C. Schubert,
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Authors: G.V. Dunne, Q.-H. Wang, H. Gies, C. Schubert
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65. Pair creation in inhomogeneous fields from worldline instantons
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66. Closed-form weak field expansion of two-loop Euler-Heisenberg Lagrangians
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Author: C. Schubert,
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69. Mass gap for gravity localized on Weyl thick branes
Authors: N. Barbosa-Cendejas, A. Herrera-Aguilar, M. A. Reyes Santos, and C. Schubert, publ. in *Phys. Rev.* **D 77** (2008) 126013.

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Authors: F. Bastianelli, U. Nucamendi, C. Schubert and V.M. Villanueva,
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Authors: F. Bastianelli, U. Nucamendi, C. Schubert and V.M. Villanueva,
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Authors: F. Bastianelli, O. Corradini, P. Pisani and C. Schubert,
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POSTER PRESENTATIONS

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5. Berends-Giele currents, color-kinematics duality and double-copy relations from the string-based formalism
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CITATIONS

4781 citations registered to my publications in the INSPIRE HEP archive at the Stanford Linear Accelerator, U.S. (http://www.projecthepinspire.net/) as of May 3, 2024. More than 7000 citations in Google Scholar.

Lecturing:

Course on *Feynman Graphs and Renormalization Theory*, given during the fall term 1995/6 at Humboldt University Berlin (graduate level, two hours weekly).
Content: Green's functions in classical field theory; Feynman rules for scalar field theory; LSZ reduction; regularisation methods; BPHZ renormalisation; methods for graph calculation; renormalisation group equations.

Course on *Path Integrals in Quantum Mechanics and Quantum Field Theory*, given during the fall term 1996/7 at Humboldt University Berlin (graduate level, two hours weekly with additional weekly exercise class).
Content: Derivation of the Feynman path integral; path integrals for one-dimensional systems (Harmonic oscillator, Duru-Kleinert solution for the Coulomb potential); Feynman-Fradkin path integral in quantum field theory; worldline representation of one-loop effective actions; Grassmann path integrals; Bern-Kosower formalism and application to QED/QCD amplitude calculations.

Course on *Quantum Mechanics I*, given during the spring term 2001 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly with additional weekly exercise class; in Spanish language).
Content: Historical development of Quantum Mechanics; mathematical formalism; physical axioms; two-level systems; harmonic oscillator; angular momentum; central potentials; perturbation theory; semiclassical approximation; the Feynman path integral.

Course on *Quantum Mechanics II*, given during the fall term 2001 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly with additional weekly exercise class; in Spanish language).
Content: Nonrelativistic scattering theory; identical particles in quantum mechanics; Lorentz and Poincare invariance; the free Klein-Gordon and Dirac equations; free solutions; Feshbach-Villars and Foldy-Wuthuysen transformations; gauge invariance and minimal coupling; central potentials; applications of the Klein-Gordon and Dirac equations to bound state problems; relativistic scattering theory and applications.

Course on *Mathematical Methods II*, given during the spring term 2002 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly with additional weekly exercise class; in Spanish language).
Content: Regular and singular Sturm-Liouville systems; orthogonal polynomials and their properties; partial differential equations and their classification; the Cauchy problem; characteristic surfaces; elliptic systems with boundary conditions; Green's functions in one and several dimensions; Green's functions for the Laplacian and wave operator; applications of Green's functions in Electrodynamics and Quantum Mechanics; tensor and exterior algebra; tensor fields and differential forms; integration of differential forms.

Course on *Introductory Quantum Mechanics*, given during the spring term 2003 at the Department of Physics and Geology, UTPA (undergraduate level, four hours weekly with exercises).
Content: Historical development of Quantum Mechanics; mathematical formalism; physical axioms; simple one-dimensional problems; harmonic oscillator; angular momentum; central potentials and the hydrogen atom; applications in atomic and molecular physics; Bose-Fermi statistics.

Course *Intermediate Physics*, given during the spring term 2003 at the Department of Physics and Geology, UTPA (undergraduate level, three hours weekly with exercises).
Content: Calculus-based Mechanics.
Textbook: R.A. Serway, R.J. Beichner, *Physics for Scientists and Engineers*, Part I.

Laboratory *Intermediate Physics II*, given during the fall term 2003 at the Department of Physics and Geology, UTPA (undergraduate level, three hours weekly).
Content: Electromagnetism and Circuit Theory.

Course *General Physics II*, given during the fall term 2003 at the Department of Physics and Geology, UTPA (undergraduate level, three hours weekly with exercises).
Content: Electromagnetism and Optics.

Course *Electromagnetic Theory*, given during the spring term 2004 at the Department of Physics and Geology, UTPA (undergraduate level, three hours weekly with exercises).
Content: Vector analysis; electrostatics; methods for solving the Laplace and Poisson equations; electrostatic fields in matter; magnetostatics; magnetic fields in matter; electrodynamics; Maxwell's equations.
Textbook: D. Griffiths, *Introduction to Electrodynamics*, chapters 1-7.

Course on *Quantum Mechanics II*, given during the fall term 2005 at the Facultad de Ciencias Físico-Matemáticas, University of Michoacan, Morelia (undergraduate level, four hours weekly; in Spanish language).

Course on *Quantum Mechanics I*, given during the spring term 2006 at the Facultad de Ciencias Físico-Matemáticas, University of Michoacan, Morelia (undergraduate level, four hours weekly; in Spanish language).
Content: Historical development of quantum mechanics; mathematical preparations; the wave function; quantum mechanics in one dimension; general formalism; quantum mechanics in three dimensions.

Course on *Quantum Mechanics II*, given during the spring term 2006 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).
Content: Angular momentum and spin; central potentials; time independent nonrelativistic perturbation theory; nonrelativistic scattering theory; identical particles in quantum mechanics; relativistic wave equations; basic properties of the Dirac equation; solutions of the Dirac equation; time dependent nonrelativistic perturbation theory.

Course on *Electrodynamics II*, given during the fall term 2006 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Propedeutical Course on *Thermodynamics and Statistical Physics*, given during the fall term 2006 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (undergraduate level, three hours weekly; in Spanish language).

Course on *Quantum Field Theory I*, given during the spring term 2007 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Thermodynamics and Statistical Physics*, given during the fall term 2007 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Field Theory II*, given during the fall term 2007 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Field Theory III*, given during the spring term 2008 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Theoretical Mechanics*, given during the fall term 2008 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Field Theory IV*, given during the fall term 2008 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Mathematical Methods for Physics II*, given during the spring term 2009 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Modern Field Theory I*, given during the spring term 2009 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Modern Field Theory II*, given during the fall term 2009 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Thermodynamics and Statistical Physics*, given during the fall term 2010 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Field Theory II*, given during the spring term 2011 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *The Standard Model of Elementary Particle Physics*, given during the fall term 2011 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Introduction to Supersymmetry*, given during the spring term 2013 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *String Theory 1*, given during the fall term 2013 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly).

Course on *String Theory 2*, given during the spring term 2014 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly).

Course on *Bound States in Quantum Field Theory*, given during the spring term 2014 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Thermodynamics and Statistical Physics*, given during the fall term 2014 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *General Relativity I*, given during the spring term 2015 at the School of Physical and Mathematical Sciences, University of Michoacan, Morelia (undergraduate level, four hours weekly).

Course on *Mathematical Methods for Physics*, given during the fall term 2015 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly).

Course on *General Relativity I*, given during the spring term 2016 at the School of Physical and Mathematical Sciences, University of Michoacan, Morelia (undergraduate level, four hours weekly).

Course on *Thermodynamics and Statistical Physics*, given during the fall term 2016 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Electrodynamics*, given during the fall term 2017 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Mathematical Methods for Physics*, given during the fall term 2017 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly).

Course on *Quantum Field Theory*, given during the spring term 2018 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Thermodynamics and Statistical Physics*, given during the fall term 2018/9 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Gauge Theories*, given during the fall term 2018/9 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Field Theory*, given during the spring term 2019 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *The Worldline Formalism*, given during the fall term 2020 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Course on *Quantum Gravity*, given during the spring term 2021 at the Institute of Physics and Mathematics, University of Michoacan, Morelia (graduate level, four hours weekly; in Spanish language).

Guest Lecturing:

Set of five lectures on "The Bern-Kosower Formalism in the Worldline Path Integral Approach", given at Université Louis Pasteur Strasbourg (France) in February 1995.

Set of four lectures on "String-inspired Methods for Calculations in Quantum Field Theory", given for the Graduiertenkolleg "Physical Systems with Many Degrees of Freedom" at the Physics Department of Heidelberg University, in June/July 1995.

Set of five lectures on "String-inspired methods and the worldline formalism", given at the 28th Saalburg Summer School, Bayerischzell, Germany, August 29 - September 9, 2022 (https://saalburg.aei.mpg.de/program-of-2022/).

Tutorial "Introduction to the worldline formalism" addressed to graduate students and young researchers, consisting of two one-hour lectures given at the Institute for Basic Science (IBS), Gwangju, South Korea, on September 15, 2023.

Teaching Assistance:

Tutoring of Seminar Classes at the Department of Physics, Heidelberg University (12 hours weekly, graduate level):

Winter Term 1991/2: Seminar on Quantum Mechanics

Summer Term 1992: Seminar on Quantum Mechanics

Winter Term 1992/3: Seminar on Electrodynamics

MATHEMATICS

Teaching Assistance:

Direction of Exercise Classes at the Department of Mathematics of Regensburg University (12 hours weekly):

Winter Term 1980/1: Analysis I	(undergraduate level)
Summer Term 1981: Analysis II	(undergraduate level)
Winter Term 1981/2: Analysis III	(undergraduate level)
Summer Term 1982: Linear Algebra	(undergraduate level)
Winter Term 1982/3: Functional Analysis	(graduate level)
Summer Term 1983: Analysis II	(undergraduate level)
Winter Term 1983/4: Differential Geometry	(graduate level)

MUSIC

Lecturing:

Course on *Traditional Harmony*, given during the spring term 2001 at the Department of Fine Arts, University of Michoacan, Morelia (undergraduate level, two hours weekly, with exercises in four-voiced part writing; in Spanish language).
Content: Elementary chords and progression rules; variants of the dominant sept; extraneous notes; alteration; modulation; special characteristics of the Bach period.

BACHELOR THESIS SUPERVISION

Supervision of the Licenciatura thesis of Cesar Moctezuma Mata Zamora at the Facultad de Ciencias Físico-Matemáticas, University of Michoacan, in 2016-2017. Title of thesis: *Photon-photon scattering*. Thesis accepted on March 1, 2017.

Supervision of the Licenciatura thesis of Isai Raya Farias at the Facultad de Ciencias Físico-Matemáticas, University of Michoacan, in 2018-2019. Title of thesis: *acción efectiva de un campo e Maxwell arbitrario interactuando mediante un campo cuántico escalar*. Thesis accepted on June 27, 2019.

Supervision (jointly with Dr. James P. Edwards) of the Licenciatura thesis of Carlos Javier Servin Tomas at the Facultad de Ciencias Físico-Matemáticas, University of Michoacan, in 2019-2020. Title of thesis: *Una descomposición espín-orbital en el formalismo Worldline para dispersiones de fotones*. Thesis accepted on November 11, 2020.

MSc THESIS SUPERVISION

Supervision of the MSc thesis of José Manuel Dávila Dávila at the Institute of Physics and Mathematics, University of Michoacan, in 2007-2008. Title of thesis: *Leading gravitational correction to the scalar Euler-Heisenberg Lagrangian*. Thesis accepted on April 18, 2008, with honours.

Supervision of the MSc thesis of Cristhiam Lopez at the Institute of Physics and Mathematics, University of Michoacan, in 2009-2010. Title of thesis: *Photon amplitudes in the worldline formalism*. Thesis accepted on February 21, 2010.

Supervision of the MSc thesis of Maria Anabel Trejo at the Institute of Physics and Mathematics, University of Michoacan, in 2010-2011. Title of thesis: *Phenomenological bounds on the free parameter of Born-Infeld theory*. Thesis accepted on August 29, 2011, with honours.

Supervision of the MSc thesis of Misha Arturo Lopez at the Institute of Physics and Mathematics, University of Michoacan, in 2010-2011. Title of thesis: *Off-shell four-photon amplitudes in the worldline formalism*. Thesis accepted on August 29, 2018, with honours.

Supervision of the MSc thesis of Cesar Moctezuma Mata Zamora at the Institute of Physics and Mathematics, University of Michoacan, in 2017-2018. Title of thesis: *Multi-photon amplitudes*. Thesis accepted on April 9, 2019.

PhD THESIS SUPERVISION

Supervision of the PhD thesis of Denny Fliegner at the Physics Department of Heidelberg University in 1994-1997. Title of thesis: *Worldline Path Integral Methods and their Application to the Computation of Effective Actions in Gauge Theory*. Thesis accepted on July 20th, 1997, with the mark 1.0.

Supervision of the PhD thesis of José Manuel Dávila Dávila at the Institute of Physics and Mathematics, University of Michoacan, in 2008-2011. Title of thesis: *Einstein-Maxwell theory at the one-loop level using the worldline formalism*. Thesis accepted on February 23, 2011.

Supervision of the PhD thesis of Naser Ahmadiniaz at the Institute of Physics and Mathematics, University of Michoacan, in 2011-2014. Title of thesis: *New techniques for off-shell calculations in gauge theory and gravity*. Thesis accepted on August 19, 2014.

Co-supervision (with Dr. José Antonio Zapata) of the PhD thesis of Mona Arjang at the Institute of Physics and Mathematics, University of Michoacan, in 2011-2014. Title of thesis: *Two studies of non-linearity in field theory*. Thesis accepted on July 18, 2014.

Co-supervision (with Dr. Axel Weber) of the PhD thesis of Ravindra Thakur at the Institute of Physics and Mathematics, University of Michoacan, in 2011-2014. Title of thesis: *Application of the worldline formalism to bound states*. Thesis accepted on July 18, 2014.

Supervision of the PhD thesis of Maria Anabel Trejo at the Institute of Physics and Mathematics, University of Michoacan, since September 2013. Title of thesis: *Bound states in the worldline formalism*. Thesis accepted on September 1, 2017.

POSTDOCTORAL SUPERVISION

Supervision of Dr. Louise Martin (PhD University of Western Ontario, 2002) for her postdoctoral work at the IFM, UMSNH, September - December 2002.

Supervision of Dr. Idrish Huet Hernandez (PhD Cinvestav, Mexico – Dublin, Institute for Advanced Studies, Ireland, 2008) for his postdoctoral work at IFM, UMSNH, September 2008 – August 2010.

Supervision of Dr. Adolfo Huet Soto (PhD University of Connecticut, US, 2010) for his postdoctoral work at IFM, UMSNH, October 2010 – September 2011.

Supervision of Dr. James Edwards (PhD University of Durham, UK, 2015) for his postdoctoral work at IFM, UMSNH, September 2016 – May 2018.

ORGANIZATION OF ACADEMIC EVENTS

Coorganizer of the School "School on spinning particles in quantum field theory: worldline formalism, higher spins, and conformal geometry", held in Morelia, Mexico, November 19-23, 2012. At the School I gave a set of five lectures with title "Lectures on the worldline formalism".

Coorganizer of the Workshop "Workshop on spinning particles in quantum field theory: worldline formalism, higher spins, and conformal geometry", held in San Cristobal, Chiapas, Mexico, November 5-8, 2013.

Coorganizer of the Workshop "Workshop in the memory of Victor Villanueva", held in Morelia, Mexico, on Dec. 6, 2013.

CONFERENCES and WORKSHOPS

1. Workshop on "Renormalization of Quantum Field Theories with Nonlinear Field Transformations",
Ringberg Castle, Germany, February 16–20, 1987.

2. 3rd Hellenic School on Elementary Particle Physics,
Corfu, Greece, September 13–30, 1989.

3. Strings and Symmetries 1991,
Stony Brook, N.Y., May 20–25, 1991.

4. Spring School on String Theory, Gauge Theory and Quantum Gravity,
ICTP Trieste, Italy, April 19–29, 1993.

5. DESY Theory Workshop 1993 on Quantum Chromodynamics,
Hamburg, September 29–October 1, 1993
(talk given: *"On the Calculation of Effective Actions in Nonabelian Gauge Theory by String Methods"*).

6. Bad Honnef Workshop,
Bad Honnef, March 6–10, 1994
(talk given: *"Some Applications of the Bern-Kosower Formalism"*).

7. Spring School on String Theory, Gauge Theory and Quantum Gravity,
ICTP Trieste, Italy, April 12–22, 1994.

8. Workshop QCD 94, Montpellier, France, July 7–13, 1994
(talk given: *"Multiloop Calculations in QED by Superparticle Path Integrals"*).

9. DESY Theory Workshop 1994 on Supersymmetry,
Hamburg, September 28–30, 1994
(talk given: *"Supersymmetry as a Calculational Tool in Quantum Electrodynamics"*).

10. Strings '95,
Los Angeles, March 13–18, 1995.

11. Workshop "Higher Order Perturbative Corrections in the Standard Model",
Aspen, July 31 – August 18, 1995
(talk given: *"The Worldline Path Integral Approach to Quantum Electrodynamics"*).

12. Spring School and Workshop on String Theory, Gauge Theory and Quantum Gravity,
ICTP Trieste, Italy, March 18 – 27, 1996.

13. Workshop "QCD and QED in Higher Orders",
Rheinsberg, Germany, April 21 – April 26, 1996
(talk given: *"Three Applications of the String-Inspired Technique to Quantum Electrodynamics"*).

14. XXXVI School of Theoretical Physics,
Zakopane, Poland, June 1-11, 1996
(two lectures given: *"An Introduction to the Worldline Technique for QFT Calculations"*).

15. Frontier Tests of QED and Physics of the Vacuum,
Sandansky, Bulgaria, June 9-15, 1998
(talk given: *"On the Calculation of QED Amplitudes in a Constant Field"*).

16. Path Integrals from peV to TeV,
Florence, Italy, 25-29 August, 1998
(talk given: *"Worldline Path Integrals as a Calculational Tool in Quantum Field Theory"*).

17. Euroconference on the Standard Model and beyond,
Corfu, Greece, 6-14 September, 1998
(talk given: *"Axial Vector Processes, Second Order Fermions, and Standard Model Photon-Neutrino Processes"*).

18. 1999 Aspen Winter Conference on Non-Perturbative Particle Dynamics,
Aspen, US, 10-16 January, 1999
(talk given: *"String-inspired Master Formulas for Various Field Theories"*).

19. Systèmes Intégrables et Cordes,
Annecy-le-Vieux, France, September 8 – 10, 1999.

20. Symmetry found and lost,
Institute for Advanced Study, Princeton, US, October 16, 1999.

21. Quantization, Gauge Theory, and Strings,
international conference dedicated to the memory of Professor Efim Fradkin,
Lebedev Institute, Moscow, June 5 – 10, 2000
(talk given: *"Four-point functions of chiral primary operators in $N = 4$ SYM"*).

22. QED 2000,
ICTP Trieste, Italy, October 5 – 11, 2000
(talk given: *"QED in the worldline formalism"*).

23. Quantum Field Theory under the Influence of External Conditions,
Leipzig, Germany, September 10 – 14, 2001
(talk given: *"Two-loop Euler-Heisenberg Lagrangians and Borel Analysis"*).

24. Third International Sakharov Conference on Physics,
Lebedev Institute, Moscow, June 24 – 29, 2002
(talk given: *"Two – Loop Self – Dual QED"*).

25. XVI Annual Meeting of the Mexican Division of Particles and Fields
UNAM, Mexico City, July 4 – 5, 2002
(plenary talk: *"Quantum Field Theory in the string – inspired formalism"*).

26. Collaborative Meeting on "Vacuum Pair Creation",
European Center of Theoretical Physics Trento, November 4 – 6, 2002
(talk given: *"Radiative Corrections to the Euler-Heisenberg Lagrangian"*).

27. "Balade dans les champs - Strolling in the fields",
Service de Physique Théorique de Saclay, June 26 – 27, 2003.

28. IX Mexican Workshop of Particles and Fields,
Univ. of Colima, Mexico, November 17 – 22, 2003
(plenary talk: *"Multiloop Information from the QED Effective Lagragian"*).

29. Cortona 2004, XXVI Convegno informale di fisica teorica,
Cortona, Italy, May 26 - 29, 2004
(plenary talk: *"Self-dual effective Lagrangians and 'all +' helicity amplitudes"*).

30. Workshop on Semiclassical Approximation and Vacuum Energy,
Texas A& M, College Station, USA, January 12 – 16, 2005
(talk given: *"Worldline Instantons and WKB"*).

31. X Mexican Workshop on Particles and Fields,
Morelia, Mexico, November 7 – 12, 2005
(talk given: *"Pair Creation in Inhomogeneous Fields from Worldline Instantons"*).

32. XI Marcel Grossmann Meeting on General Relativity,
Berlin, July 23 – 29, 2006
(talk given: *"Pair Creation in Inhomogeneous Fields"*, in the parallel session BHT1: *Black Holes and Pair Creation in Strong Fields*).

33. VI Latin American Symposium on High Energy Physics,
Puerto Vallarta, Mexico, November 1 – 8, 2006
(talk given: *"QED in the worldline representation"*).

34. Quantum Field Theory under the Influence of External Conditions, QFEXT07,
Leipzig, Germany, September 16 – 21, 2007
(talk given: *"Photon-graviton mixing in an electromgnetic field"*).

35. Workshop on Quantum Field Theory and Mathematical Physics,
APCTP Pohang, South Korea, Jan 6 – 15, 2008
(two lectures given: *Worldline formalism 1: flat space*, *Worldline formalism 2: curved space*).

36. XIII Mexican School of Particles and Fields,
San Carlos, Mexico, October 2 – 11, 2008 (talk given: *"The effective action in Einstein-Maxwell theory"*).

37. Quantum Field Theory under the Influence of External Conditions, QFEXT09,
Norman, Oklahoma, U.S., September 21 – 25, 2009 (talk given: *"Three-loop Euler-Heisenberg Lagrangian and asymptotic analysis in 1+1 QED"*).

38. International Conference on Quantum Field Theory and Gravity,
Tomsk, Russia, July 5-9. 2010 (talk given" *"one-loop photon-graviton amplitudes"*).

39. XIV Mexican School of Particles and Fields,
Morelia, Mexico, Nov. 8-12, 2010 (talk given: *"Schwinger pair creation of particles and strings"*).

40. Supersymmetries & Quantum Symmetries – SQS'2011,
Dubna, Russia, July 18-23, 2011. (talk given: *"Photon-graviton amplitudes from the effective action"*).

41. Quantum Field Theory under the Influence of External Conditions, QFEXT11,
Benasque, Spain, September 19-23, 2011. (talk given: *"The Euler-Heisenberg Lagrangian beyond one loop"*).

42. Convegno informale di Fisica Teorica Cortona 2012,
Cortona, Italy, May 30 - June 1, 2012 (talk given: *"Schwinger pair creation of particles and strings"*).

43. Quantum Field Theory, Periods and Polylogarithms III,
Berlin, Germany, June 25-29, 2012.

44. Δ-Meeting 2013,
Heidelberg, Germany, January 10-12, 2013 (talk given: *"Schwinger pair creation in time-dependent fields"*).

45. 3rd Winter Workshop on Non-Perturbative Quantum Field Theory,
Sophia Antipolis, France, May 28-30, 2013 (talk given: *"Worldline instantons, Borel analysis, and the photon S-matrix at high loop orders"*).

46. LPHYS'13,
Prague, Czech Republic, July 15-19, 2013 (talk given: *"Schwinger pair creation in constant and time-dependent fields"*).

47. Memorial workshop for Victor Manuel Villanueva Sandoval,
Morelia, Mexico, December 6, 2013 (talk given: *"Processes with photons and gravitons"*).

48. LPHYS'14,
Sofia, Bulgaria, July 14-18, 2014 (talk given: *"Schwinger pair creation in electric fields"*).

49. Frontiers of Intense Laser Physics,
KITP, UC Santa Barbara, U.S., July 21 - September 19, 2014 (talk given: *"Schwinger pair creation in inhomogeneous electric fields"*).

50. 4th Winter Workshop on Non-Perturbative Quantum Field Theory,
Sophia Antipolis, France, February 2-5, 2015 (talk given: *"Asymptotic behaviour of the QED perturbation series"*).

51. 5th Workshop on Non Perturbative Aspects of Field Theories,
Morelia, Mexico, May 4-8, 2015 (talk given: *"Asymptotic behaviour of the QED perturbation series"*).

52. Conference on Extremely High Intensity Laser Physics,
Heidelberg, Germany, July 21 - 24, 2015 (talk given: *"Pair creation in constant and time-dependent electric fields"*).

53. Workshop Loops and Legs in Quantum Field Theory,
Leipzig, Germany, April 24 - 29, 2016 (talk given: *"Gluon form factor decompositions from the worldline formalism"*).

54. Δ Meeting 2016,
Heidelberg, Germany, April 28 - 30, 2016 (talk given: *"N-gluon vertices from the string-inspired formalism"*).

55. International Workshop on Strong Field Problems in Quantum Theory,
Tomsk, Russia, June 6 - 11, 2016 (talk given: *"Multiloop Euler-Heisenberg Lagrangians, Schwinger pair creation, and the photon S-matrix"*).

56. International Workshop Path Integration in Complex Dynamical Systems,
Leiden, University of Leiden, Lorentz Center, Netherlands, February 6 - 10, 2017 (talk given: *"The worldline path integral approach to quantum field theory"*).

57. 6th International Conference on New Frontiers in Physics 2017,
Conference Center of the Orthodox Academy of Creta, Kolymbari, Greece, August 17 - 29, 2017 (talk given: *"Form-factor decompositions of the QCD four-gluon vertex"*).

58. Reunión Anual de la Red FAE 2017,
Tlaxcala, Mexico, September 28 - 30, 2017 (talk given: *"Tadpole contribution to the fermion propagator in a constant field (Raiders of the Lost Diagram)"*).

59. Loops and Legs 2018,
St. Goar, Germany, April 30 - May 5, 2018 (talk given: *" Multiloop Euler-Heisenberg Lagrangians, Schwinger pair creation, and the QED N - photon amplitudes"*).

60. Quantum 2018,
UNAM Morelia, Mexico, June 20 - 22, 2018 (talk given: *"Path integral quantization in curved spaces"*).

61. 19th Lomonosow conference on elementary particle physics,
Moscow State University, August 22 - 28, 2019 (talk given: *"Multiloop QED in the Euler-Heisenberg approach"*).

62. Third Conference on Extremely High Intensity Laser Physics,
Stanford, September 3-6, 2019 (talk given: *"Fermionic Schwinger pair creation"*).

63. Algebraic Structures in Perturbative Quantum Field Theory,
a conference in honor of Dirk Kreimer's 60th birthday, Institut de Hautes Études Scientifiques, Université Paris-Saclay, November 16-20, 2020, (talk given (webinar): *"New techniques in worldline integration"*).

64. 16th Marcel Grossmann Meeting,
Virtual, July 5-9, 2021 (talk given: *"Tadpole contribution to magnetic photon-graviton conversion"*), recorded as talk No. 40 on MG16.

65. LPHYS'21,
Virtual, July 19-23, 2021 (talk given: *"Gelfand-Dikii equation for fermionic Schwinger pair production"*).

66. Congreso Nacional de Física 21,
virtual, October 3-8, 2021 (talk given: *"Pair creation in de Sitter space"*).

67. Loops and Legs 2022,
Ettal, Germany, April 25 - 30, 2022 (talk given: *"Summing Feynman diagrams in the worldline formalism"*).

68. Mathematical and Conceptual Aspects of Quantum Theory,
Casa Matemática Oaxaca, Mexico, held via Zoom from June 12-17, 2022.

69. 34th International Colloquium on Group Theoretical Methods in Physics,
Strasbourg, 18-22 July 2022 (talk given: *"Group invariants for Feynman diagrams"*).

70. LPHYS'22,
virtual, 18 - 22 July 2022 (talk given: *"The worldline formalism in strong-field QED"*), available at
`https://www.youtube.com/watch?v=ej7mLJXlcNw&list=PLQxgopRUFeKXffgt29qopjVYe-gMzbbZW&index=18`.

71. Amplitudes 2022,
August 8-12, 2022, Prague, Czech Republic (*poster presented*: *"Berends-Giele currents, color-kinematics duality and double-copy relations from the string-based formalism"*).

72. AAPPS-DACG Workshop on Astrophysics, Cosmology, and Gravitation,
November 14-17, 2022, Online (talk given: *"Processes in Einstein-Maxwell theory"*).

73. 44th Symposium on Nuclear Physics,
Cocoyoc, Mexico, January 9-12, 2023 (talk given: *"Photon-photon scattering"*).

74. CTPU-KNU Workshop on Particles, Gravitation and Cosmology,
April 6-8, 2023, Kunsan, South Korea, (talk given: *"An overview of the worldline formalism"*).

75. Amplifying Gravity at All Scales,
June 26 - July 23, 2023, NORDITA, Stockholm, Sweden (talk given: *"String-based vs. string-inspired in quantum gravity"*).

76. New Trends in Quantum Field Theory, Gravity and Amplitudes,
August 17, 2023, Puebla, Mexico, (talk given: *"Particle production by gravitational fields"*).

77. 5th Conference on Extremely High Intensity Laser Physics (ExHILP 2023),
September 12 – 15, 2023, Gwangju, South Korea, (talk given: *"Efficient calculation of one-loop processes in constant and plane-wave fields"*).

78. FLAG meeting on Gravity and Quantum Physics,
21-22 December 2023, Bologna, Italy.

79. International School on Nuclear Methods and Applied Research in Environmental, Material and Life Sciences (NUMAR-2024),
February 25-28, 2024, Varadero, Cuba.

INVITED SEMINARS

1. The γ_5 – Problem of Dimensional Renormalization,
University of Hamburg, October 25, 1991.

2. The γ_5 – Problem of Dimensional Renormalization,
University of Heidelberg, November 22, 1991.

3. The Field Theory for the Closed String,
University of Mainz, February 10, 1993.

4. Modern Covariant Closed String Field Theory,
University of Hannover, June 18, 1993.

5. On the Calculation of Effective Actions in Nonabelian Gauge Theory by String Methods,
DESY Hamburg, September 30, 1993,
see conferences list.

6. Strings, Superparticles, and Effective Actions,
University of Hannover, October 20, 1993.

7. Some Applications of the Bern-Kosower Formalism,
CERN Theory Division, Geneva, Phenomenology Seminary, February 11, 1994.

8. Some Applications of the Bern-Kosower Formalism,
Bad Honnef, March 8, 1994,
see conferences list.

9. Quantum Field Theory by Worldline Path Integrals,
CRN Strasbourg, Université Louis Pasteur, March 31, 1994.

10. String-Inspired Calculations in Quantum Field Theory,
Physics Department, University of California at Los Angeles, June 17, 1994.

11. String-Inspired Calculations in Quantum Field Theory,
Physics Department, University of Chicago, June 22, 1994.

12. String-Inspired Calculations in Quantum Field Theory,
Center for Theoretical Physics, Massachusetts Institute of Technology, Boston,
June 27, 1994.

13. String-Inspired Calculations in Quantum Field Theory,
Physics Department, McGill University, Montreal, June 29, 1994.

14. Multiloop Calculations in QED by Superparticle Path Integrals,
Montpellier, France, July 9, 1994,
see conferences list.

15. Strings, Superparticles, and Quantum Field Theory,
N–Division, Lawrence Livermore National Laboratory, Livermore, USA,
September 13, 1994.

16. Strings, Superparticles, and Quantum Field Theory,
SLAC, Stanford University, September 14, 1994.

17. Supersymmetry as a Calculational Tool in Quantum Electrodynamics,
DESY Hamburg, September 29, 1994,
see conferences list.

18. Strings, Superparticles, and Quantum Field Theory,
Institut für Theoretische Physik, Universität Frankfurt a. M., November 17, 1994.

19. String-inspired Methods for Calculations in Quantum Field Theory,
Fachbereich Physik, Universität Wuppertal, December 8, 1994.

20. Strings, Superparticles, and Quantum Field Theory,
MPI for Physics Munich, February 6, 1995.

21. The Worldline Path Integral Approach to the Bern-Kosower Formalism,
Physics Department, University of California at Los Angeles, May 5, 1995.

22. The Worldline Path Integral Approach to Quantum Field Theory,
Lawrence Berkeley Laboratory, Berkeley, US, May 23, 1995.

23. The Worldline Path Integral Approach to Quantum Electrodynamics,
Aspen Center for Physics, Aspen, US, August 9, 1995,
see conferences list.

24. Three Applications of the String-Inspired Technique to QED,
Rheinsberg, Germany, April 23, 1996,
see conferences list.

25. Photon-Splitting in a Magnetic Field,
Physics Department, Heidelberg University, Germany, July 25, 1996.

26. An Introduction to the Worldline Technique for QFT Calculations,
Zakopane, Poland, June 6,7, 1996,
see conferences list.

27. Nonlinear Effects in Quantum Electrodynamics,
Physics Department, Frankfurt University, Germany, January 9, 1997.

28. String-Inspired Techniques for Quantum Field Theory Calculations,
Argonne National Laboratories, US, February 17, 1997.

29. Photon Splitting, Euler-Heisenberg Lagrangians, and the QED β – Function,
Legnaro National Laboratories, Italy, May 6, 1997.

30. String – Inspired Calculation Techniques in Quantum Field Theory,
Mainz University, July 9, 1997.

31. String Theory Methods for Field Theory Calculations,
Physics Department, University of Michigan, Ann Arbor, US, October 17, 1997.

32. Optimized Parameter Integral Representations for Gauge Theory Amplitudes,
Argonne National Laboratories, US, October 20, 1997.

33. String Theory Methods for Field Theory Calculations,
Department of Applied Mathematics, University of Western Ontario,
London, Canada, November 20, 1997.

34. Calculation of QED and QCD Scattering Amplitudes in the String-Inspired Formalism,
Series of seminars given at Argonne National Laboratories, USA,
Nov. 24, Dec. 4,11,18,23, 1997.

35. On the Calculation of QED Amplitudes in a Constant Field,
Sandansky, Bulgaria, June 10, 1998
see conferences list.

36. Nonlinear Effects in QED - Theory and Experiment,
Physics Department, Humboldt University, Berlin, Germany, July 14, 1998.

37. Worldline Path Integrals as a Calculational Tool in Quantum Field Theory,
Florence, Italy, August 29, 1998
see conferences list.

38. Axial Vector Processes, Second Order Fermions, and Photon-Neutrino Processes,
Corfu, Greece, September 12, 1998
see conferences list.

39. String-inspired Master Formulas for Various Field Theories,
Aspen, US, January 14, 1999
see conferences list.

40. Future Directions in Quantum Field Theory and General Relativity,
Karlstad University, Sweden, August 16, 1999.

41. String-Inspired Methods for Quantum Field Theory Calculations,
Swansea University, Swansea, Wales, November 17, 1999.

42. Four - Point Functions in $D = 4$ Superconformal Field Theory,
Laboratoire de Physique Mathématique, Université Montpellier II,
December 9, 1999.

43. String-Inspired Methods for Quantum Field Theory Calculations,
Department of Physics, University of Neuchatel, Neuchatel, Switzerland,
December 14, 1999.

44. Four - Point Functions in $N = 4$ SYM Theory,
Department of Physics, University of Michoacan, Morelia, Mexico, April 5, 2000.

45. Multiple Zeta Value Identities from Feynman Diagrams,
Department of Mathematics, Rutgers University, Piscataway, US, April 14, 2000.

46. Four – point Functions of Chiral Primary Operators in $N = 4$ SYM,
Lebedev Institute, Moscow, June 5, 2000,
see conferences list.

47. Super – Yang – Mills Theory in Harmonic Superspace,
Department of Physics, University of Bologna, Italy, June 23, 2000.

48. Super – Yang – Mills Theory in Harmonic Superspace,
Department of Physics, Heidelberg University, July 20, 2000.

49. QED in the Worldline Formalism,
ICTP Trieste, October 6, 2000,
see conferences list.

50. Quantum Field Theory without Second Quantization,
Department of Physics, University of Guanajuato, Leon, Guanajuato, Mexico,
April 6, 2001.

51. Two-loop Euler-Heisenberg Lagrangians and Borel analysis,
Leipzig, Germany, September 11, 2001,
see conferences list.

52. Constraints from Superconformal Invariance on Correlators in $N = 4$ SYM,
Center for Mathematical Physics at Boston University, USA, January 30, 2002.

53. Nonlinear Effects in Quantum Electrodynamics,
Department of Physics, University of Rochester, USA, February 5, 2002.

54. String-inspired Techniques for Quantum Field Theory Computations,
Joint BU-Harvard-MIT Mathematical Physics Seminar, Department of Physics,
Boston University, USA, February 12, 2002.

55. String-inspired Techniques for Quantum Field Theory Computations,
Department of Physics, University of Cyprus, March 15, 2002.

56. Two – Loop Self – Dual QED,
Lebedev Institute, Moscow, June 26, 2002,
see conferences list.

57. Quantum Field Theory in the string-inspired formalism,
UNAM, Mexico City, July 5, 2002,
see conferences list.

58. Quantum Field Theory in the string-inspired formalism,
University of Florida at Gainesville, August 27, 2002.

59. Radiative Corrections to the Euler-Heisenberg Lagrangian,
EC Trento, Italy, November 5, 2002,
see conferences list.

60. Radiative corrections in quantum electrodynamics,
University of Michoacan, Morelia, Mexico, May 21, 2003.

61. The Euler-Heisenberg Lagrangian and its radiative corrections,
Erlangen University, June 3, 2003.

62. The Euler-Heisenberg Lagrangian and its radiative corrections,
Freie Universität Berlin, June 12, 2003.

63. Techniques from String Theory for Quantum Field Theory Calculations,
Max-Planck-Institut für Gravitationsphysik Potsdam, June 16, 2003.

64. The Euler-Heisenberg Lagrangian and its radiative corrections,
Heidelberg University, June 18, 2003.

65. The Euler-Heisenberg Lagrangian and its radiative corrections,
Mainz University, June 20, 2003.

66. The QED effective action and high-order perturbation theory,
Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France, July 10, 2003.

67. Multiloop information from the QED effective Lagrangian,
University of Colima, Mexico, November 22, 2003, see conferences list.

68. Maximally helicity violating photon amplitudes and the QED perturbation series,
Univ. of Bologna, Italy, May 25, 2004.

69. Self-dual effective Lagrangians and 'all +' helicity amplitudes,
Cortona, Italy, May 28, 2004,
see conferences list.

70. Maximally helicity violating photon amplitudes and the QED perturbation series,
Max-Planck-Institut für Gravitationsphysik Potsdam, June 14, 2004.

71. Maximally helicity violating photon amplitudes and the QED perturbation series,
IfM, University of Michoacan, Morelia, Mexico, August 6, 2004.

72. The Physics and Mathematics of Quantum Field Theory,
UNAM, Department of Physics, Mexico City, December 14, 2004.

73. Worldline instantons and WKB,
Univ. of Texas A&M, Dept. of Mathematics, College Station, USA, January 15, 2005.
see conferences list.

74. Worldline instantons and the QED perturbation series,
Heidelberg University, July 12, 2005.

75. Pair creation in inhomogeneous fields,
Berlin, July 25, 2006, *IX Marcel Grossmann meeting*,
see conferences list.

76. Pair creation in inhomogeneous fields,
Dept. of Physics, Univ. of Bologna, August 29, 2006.

77. QED in the worldline representation,
Puerto Vallarta, Mexico, November 7, 2006,
see conferences list.

78. Recent developments in the worldline formalism,
Dept. of Physics, Univ. of Mainz, September 13, 2007.

79. Worldline formalism 1: flat space,
APCTP Pohang, South Korea, January 15, 2008,
see conferences list.

80. Worldline formalism 2: curved space,
APCTP Pohang, South Korea, January 18, 2008,
see conferences list.

81. The worldline formalism in curved space,
Dept. of Physics, Univ. of Edinburgh, Scotland, August 25, 2008.

82. The effective action in Einstein-Maxwell theory,
Univ. of Sonora, San Carlos, Mexico, October 9, 2008,
see conferences list.

83. Recent developments in the worldline formalism,
Dept. of Physics, University of Guanajuato, Leon, Mexico, November 7, 2008.

84. Multiple ζ value identities and Bernoulli number convolution identities from quantum field theory,
UNAM, Instituto de Matemáticas, Unidad Morelia, Mexico, May 13, 2009.

85. Einstein-Maxwell theory in the worldline formalism,
UNAM, Instituto de Ciencias Nucleares, Mexico City, September 10, 2009.

86. Three-loop Euler-Heisenberg lagrangian and asymptotic analysis in 1+1 QED,
Univ. of Oklahoma, U.S., September 23, 2009,
see conferences list.

87. One-loop photon-graviton amplitudes,
CTP, Tomsk State Pedagogical University, Russia, July 8, 2010,
see conferences list.

88. One-loop processes in Einstein-Maxwell theory,
Dept. of Physics, Freie Universität Berlin, Germany, August 4, 2010.

89. Schwinger pair creation of particles and strings,
Morelia, Mexico, Nov. 10, 2010,
see conferences list.

90. Photon-graviton amplitudes from the effective action,
Dubna, Russia, July 22. 2011,
see conferences list.

91. The Euler-Heisenberg Lagrangian beyond one loop,
Benasque, Spain, September 22, 2011,
see conferences list.

92. The worldline formalism in quantum field theory,
Universidad Autónoma de Chiapas, Tuxtla, Mexico, October 28, 2011.

93. The worldline formalism in quantum field theory,
Missouri University of Science and Technology, February 16, 2012.

94. Schwinger pair creation of particles and strings,
Cortona, Italy, June 1, 2012,
see conferences list.

95. Worldline instantons, Borel analysis, and the photon S-matrix at high loop orders,
Colloquium of the Department of Physics of Humboldt-Universität zu Berlin, June 5, 2012.

96. Bound states from ladder diagrams in the worldline formalism,
Universidad Autónoma de Chiapas, Tuxtla, Mexico, September 7, 2012.

97. String-inspired representations of photon/gluon amplitudes,
Physics Department, Humboldt-Universität zu Berlin, December 10, 2012.

98. First-quantized methods in quantum field theory,
Max-Planck-Institut für Gravitationsphysik, Albert-Einstein-Institut, IMPRS Lecture, September 14, 2012.

99. Introduction to the string-inspired worldline formalism I: history and formalism,
Institute for Theoretical Physics, Friedrich-Schiller-Universität Jena, Germany, January 7, 2013.

100. Introduction to the string-inspired worldline formalism II: sample calculations,
Institute for Theoretical Physics, Friedrich-Schiller-Universität Jena, Germany, January 8, 2013.

101. Schwinger pair-creation in time-dependent fields,
Heidelberg, Germany, January 12, 2013,
see conferences list.

102. The four-gluon vertex,
UNAM, Instituto de Ciencias Nucleares, Mexico City, May 16, 2013.

103. Worldline instantons, Borel analysis, and the photon S-matrix at high loop orders,
Sophia Antipolis, France, May 29, 2013,
see conferences list.

104. Schwinger pair creation in constant and time-dependent fields,
Prague, Czech Republic, July 19, 2013,
see conferences list.

105. The string-inspired formalism for QFT calculations,
Physics Department, Delhi University, November 20, 2013.

106. The string-inspired formalism for QFT calculations,
Institute for Mathematical Sciences Chennai, November 21, 2013.

107. Schwinger pair creation in constant and time-dependent fields,
Delhi, Jawaharlal Nehru University, November 22, 2013.

108. Processes with photons and gravitons,
IFM, UMSNH, Morelia, Mexico, Dec. 6, 2013,
see conferences list.

109. Schwinger pair creation in electric fields,
Max-Planck-Institut für Kernphysik, Heidelberg, January 10, 2014.

110. Schwinger pair creation in electric fields,
Institut für Theoretische Physik, Leibniz Universität Hannover, February 28, 2014.

111. Euler-Heisenberg Lagrangians, Borel Analysis, and the photon S-matrix at high loop orders,
Dept. of Physics, Seoul National University, South Korea, April 15, 2014.

112. Schwinger pair creation in electric fields,
Center for Relativistic Laser Science, Institute for Basic Science, Gwanju, South Korea, April 18, 2014.

113. Schwinger pair creation in electric fields,
Dept. of Physics, University of Guanajuato, Leon, Mexico, June 12, 2014.

114. Schwinger pair creation in electric fields,
LPHYS'14, Sofia, Bulgaria, July 16, 2014.
see conferences list.

115. Schwinger pair creation in inhomogeneous electric fields,
Frontiers of Intense Laser Physics, Santa Barbara, U.S., July 30, 2014,
see conferences list.

116. Asymptotic behaviour of the QED perturbation series,
Sophia Antipolis, France, February 5, 2015,
see conferences list.

117. Asymptotic behaviour of the QED perturbation series,
Morelia, Mexico, May 4, 2015,
see conferences list.

118. Pair creation in constant and time-dependent electric fields,
Heidelberg, Germany, July 21, 2015,
see conferences list.

119. Schwinger pair creation in time-dependent electric fields,
Dept. of Physics, University of Puebla, Mexico, January 14, 2016.

120. Gluon form factor decompositions from the worldline formalism,
Leipzig, Germany, April 28, 2016,
see conferences list.

121. N-gluon vertices from the string-inspired formalism,
Heidelberg, Germany, April 29,
see conferences list.

122. Multiloop Euler-Heisenberg Lagrangians, Schwinger pair creation, and the photon S-matrix,
Tomsk, Russia, June 6,
see conferences list.

123. Schwinger pair creation in constant and time-dependent fields,
Department of Physics, University of Mainz, Germany, December 20, 2016.

124. Form factors for off-shell gluon amplitudes,
Department of Physics, University of Bologna, Italy, December 21, 2016.

125. Introduction to the worldline formalism,
Facultad de Ciencias, Universidad Autónoma del Estado de México, Toluca, Mexico, March 31, 2017.

126. Form-factor decompositions of the QCD four-gluon vertex,
Conference Center of the Orthodox Academy of Creta, Kolymbari, Greece, August 18, 2017,
see conferences list.

127. Tadpole contribution to the fermion propagator in a constant field (Raiders of the Lost Diagram),
Tlaxcala, Mexico, September 28, 2017,
see conferences list.

128. Introduction to the worldline formalism,
Universidad de Colima, Facultad de Ciencias, Colima, Mexico, Dicember 1, 2017.

129. Schwinger pair creation in constant and time-dependent fields,
Department of Physics, University of Bologna, Italy, December 15, 2017.

130. Multiloop Euler-Heisenberg Lagrangians, Schwinger pair creation, and the QED N - photon amplitudes,
St. Goar, Germany, May 2, 2018,
see conferences list.

131. Path integral quantization in curved spaces,
UNAM Morelia, Mexico, June 22, 2018,
see conferences list.

132. Worldline approach to the forgotten tadpole diagrams in strong-field QED, MPI für Kernphysik, Heidelberg, August 7, 2018.

133. Multiloop QED in the Euler-Heisenberg approach,
Moscow State University, August 23 2019,
see conferences list.

134. Fermionic Schwinger pair creation,
Stanford, September 5, 2019,
see conferences list.

135. The Physics of the Vacuum,
Institute of Advanced Studies, Bologna University, December 3, 2019.

136. New techniques in worldline integration,
Institut de Hautes Études Scientifiques, Université Paris-Saclay, November 19, 2020,
(webinar) see conferences list.

137. Tadpole contribution to magnetic photon-graviton conversion,
Virtual, July 6, 2021, see conferences list.

138. Gelfand-Dikii equation for fermionic Schwinger pair production,
Virtual, July 19, 2021, see conferences list.

139. Pair creation in de Sitter space,
virtual, October 8, 2021, see conferences list.

140. Asymptotic behaviour of the QED perturbation series,
CINVESTAV, Mexico City, virtual seminar, November 12, 2021.

141. Pair creation in de Sitter space,
CCM, UNAM Morelia, Mexico, 10. 3. 2022.

142. Summing Feynman diagrams in the worldline formalism,
Ettal, Germany, April 27, 2022, see conferences list.

143. Group Invariants for Feynman Diagrams,
Strasbourg, 19. July 2022, see conferences list.

144. The worldline formalism in strong-field QED,
virtual, 21. 7. 22, see conferences list, available at
https://www.youtube.com/watch?v=ej7mLJXlcNw&list=PLQxgopRUFeKXffgt29qopjVYe-gMzbbZW&index=18.

145. Processes in Einstein-Maxwell theory,
online, 16. 11. 22, see conferences list.

146. Photon-photon scattering,
ELI, Dolni Brezany, Czech Republic, November 25, 2022.

147. Photon-photon scattering,
Masaryk University, Brno, Czech Republic, December 2, 2022.

148. Introduction to the worldline formalism,
Masaryk University, Brno, Czech Republic, December 2, 2022. Available on Youtube at
https://www.youtube.com/watch?v=__j15myOk9k

149. Photon-photon scattering,
Cocoyoc, Mexico, January 10, 2023, see conferences list.

150. Photon-photon scattering,
Matter and Radiation at Extremes Webinar, on-line, January 19, 2023.

151. An overview of the worldline formalism,
Kunsan, South Korea, April 7, 2023, see conferences list.

152. Asymptotic behaviour of the QED perturbation series,
ELI, Dolni Brezany, Czech Republic, May 10, 2023.

153. String-based vs. string-inspired in quantum gravity,
NORDITA, Stockholm, July 10, 2023, see conferences list.

154. Particle production by gravitational fields,
Puebla, Mexico, August 17, 2023, see conferences list.

155. Efficient calculation of one-loop processes in constant and plane-wave fields,
Gwangju, South Korea, September 14, 2023, see conferences list.

156. The worldline approach to gauge theory,
University of Plymouth, School of Engineering, Computing and Mathematics, October 11, 2023.

157. Light-by-light scattering: past and present,
Missouri University of Science and Technology, Rolla, Missouri, October 19, 2023.

VISITS to OTHER INSTITUTES

Physics Dept., University of Hamburg:
Two weeks in September 1991.

Theory group, TATA Institute Bombay:
Four months January 1992 - May 1992.

Physics Dept., University of Hannover:
Two months October 1993 - November 1993.

CERN Theory Division, Geneva:
May 1–31, 1994; August 1–31, 1997; May 1–31, 2000.

CRN and Université Louis Pasteur Strasbourg:
February 1–28, 1995.

Physics Dept., University of California at Los Angeles:
Three months March 1995 - June 1995.

Physics Department, University of Heidelberg:
June 20 – July 17, 1995.

Institute for Advanced Study, Princeton:
August 21 – September 11, 1995; August 10 – 24, 1996; November 11 – 24, 1996.

MPI for Physics, Munich:
September 1 – September 30, 1997.

King's College, London, UK:
May 31 – June 4, 1999.

Center for Mathematical Physics at Boston University, Boston, USA:
January 16 – February 15, 2002.

Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France:
June 22 – July 12, 2003.

Physics Dept., University of Bologna:
August 2 – 14, 2003; March 16 – May 15, 2012.
MPI für Gravitationsphysik, Albert-Einstein-Institut, Potsdam, Germany:
June 1 - 30, 2004; July 26 - August 25, 2005; July 20 - August 19, 2008; July 15 - August 14, 2009; September 1 – December 31, 2012.

Institute for Mathematics, Humboldt-University Berlin:
June 1 – 30, 2012; August 1 – 31, 2012; January 21 – February 20, 2013.

Kavli Institute of Theoretical Physics, University of California at Santa Barbara:
July 28 – August 15, 2014.

Institute of Advanced Studies of the Alma Mater Studiorum - University of Bologna:
December 2 - 31, 2019.

EDITORIAL AND REFEREE ACTIVITIES

Editor in *Theoretical and Mathematical Physics with Specialty in Quantum Field Theory* for the Journal *Central European Journal of Physics*, January 1, 2005 - December 31, 2015.

Multiple referee for the journals *Journal of High Energy Physics*, *Nuclear Physics B*, *Physics Letters*, *Physical Review*, *Physical Review Letters*, and others.

GRANTS

Personal grant CONACYT PROYECTO 38293-E

Funding agency: CONACYT (Mexico)

Period: 1.1. 2002 - 31. 12. 2004

Principal investigator: Christian Schubert

Volume: 590,000 pesos

U.S.-Mexico Collaborative Research Award 0122615

Funding agencies: National Science Foundation (US), CONACYT (Mexico)

Period: 1. 12. 2001 - 31. 12. 2006.

Principal investigators: Gerald Dunne, Univ. of Connecticut and Christian Schubert

Volume: 13,232 $ (NSF) and 20,000 pesos (CONACYT)

Personal grant CONACYT Ciencias Basicas 2008 No. 101353

Funding agency: CONACYT (Mexico)

Period: 1.3.2010 – 28. 2. 2014

Principal investigator: Christian Schubert

Volume: 465,742 pesos

Personal grant CONACYT Ciencias Basicas 2014 No. 242461

Funding agency: CONACYT (Mexico)

Period: – ongoing

Principal investigator: Christian Schubert

Volume: 773,000.00 pesos

REFERENCES

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Prof. Lance Dixon
Stanford Linear Accelerator Center,
Stanford University, Stanford, CA 94309, USA
Phone: (+1) 650-926-2627
E-mail: lance@slac.stanford.edu

Prof. Gerald V. Dunne
Department of Physics,
University of Connecticut, Storrs, Connecticut 06269, USA
phone: (+1) 860-486-4978
E-mail: dunne@phys.uconn.edu

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Department of Mathematics,
King's College, University of London,
Strand, London WC2R 2LS, GB
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E-mail: phowe@kcl.ac.uk

Prof. Dr. Olaf Lechtenfeld
Institut für Theoretische Physik,
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D–30167 Hannover, Germany
Phone: (+49) (0)511-762-3667
E-mail: lechtenf@itp.uni-hannover.de

Prof. Dr. Dieter Lüst
Department für Physik,
Ludwig-Maximilians-Universität,
Theresienstr. 37,
D–80333 München, Germany
Phone: (+49)-(0)89-32354282
E-mail: dieter.luest@lmu.de