

CV of SAMUELE SANNA



CURRENT POSITION: Associate Professor at the Department of Physics and Astronomy of the University of Bologna since September 2020.

March 2018: National scientific certification (ASN) for *Full Professor* (validity 30/03/2024)

EDUCATION

06.05.2002: PhD in Physics – University of Cagliari, Department of Physics, Italy

January–May 2001: Stage at the Physics Department of the University of Parma, Italy, funded by INFN (Italian Institute for Matter Physics)

04.06.1998: Master of Physics cum laude, University of Cagliari, Department of Physics, Italy

SCIENTIFIC CAREER:

Previous Research and Academic positions:

2016 July–2020 August: Researcher and Assistant Professor at the Department of Physics and Astronomy Univ. of Bologna.

2009–June 2016: Researcher and Assistant Professor at the Physics Department of Univ. of Pavia.

2006–2009: CNISM Research Associate at the Physics Department of the University of Parma.

2003–2006: post-doc, at the Physics Department of the University of Cagliari.

2002–2003: post-doc, INFN research Unit of Cagliari and Parma.

INTERNATIONAL EXPERIENCES:

- 2019, September: Visiting researcher fellowship (official program) at the Brown University, Providence (USA).

- 2019, May: Erasmus-plus Scholar Exchange program at the University of Cordoba for a course on “Superconducting Materials” at the Electrical Engineering Department, University of Cordoba, Spain.

- 2018, May–June: Visiting researcher at the Brown University, Providence (USA).

- 2017, August–Sept: Visiting researcher fellowship (official program) at the Brown University, Providence (USA).

- Frequent User at Large Scale Facilities, often as principal investigator – namely at ISIS (UK) and PSI (CH) for muSR (also for long term experiments), and some at ILL (FR) for Neutron Diffraction, at ESRF (FR) for EXAFS and at BESSY (DE) for XANES.

EDUCATIONAL ACTIVITIES:

Supervisor of tens of Master thesis, Bachelor students and post-docs since 2005.

2019: Lecturer at the European School for Neutrons and Muons in Magnetism, 2–6 September 2019, Ispira, Italy.

From 2019: Lectures on “Introduction to the Physics of Solids” Bachelor in Physics, Univ. Bologna.

From 2017: Lecturer of “Nuclear Magnetic Resonance”, PhD in Nanoscience, Univ. Bologna.

From 2016: Lecturer of “Magnetism and Superconductivity”, Master in Physics, Univ. Bologna.

2014-2016: Lecturer of “Magnetic Resonance Spectroscopies” for the PhD program, Univ. Pavia.
2013-2016: Lectures of “Superconductivity” (part of “Complements of Matter Structure”, Pavia).
2011-2014: Lectures General Physics (Electromagnetism and Optics), Bachelor in Chemistry, Pavia.
2009-2016: Lectures on Introduction to the Physics of Solids, Bachelor in Physics, Univ. Pavia.
2006/2008: Assistant to the courses of General Physics, Bachelor in Engineer, Univ. Parma.
2005/2006: Lectures on Experimental Magnetism for Master students in Physics, Univ. Cagliari.
2002/2004: Assistant to the Physics Labs (Bachelor and Master in Physics), Univ. Cagliari.

SCIENTIFIC ACTIVITY

My main research interest has been the experimental study of Quantum Materials Physics, mainly magnetism and superconductivity: since 1998 High Tc superconducting compounds (mainly Cu- and Fe-based), 2006-2010 manganites, since 2011 new Molecular Magnets (PRIN project as PI 2011-2013), since 2014 magnetic pyrochlores, recently spin-orbit 5d magnetic oxides. Since 2014, I have started to study Hydrogen Storage materials (Cariplo Foundation project as Unit responsible, April 2014-September 2016).

My main expertise is on muon spin spectroscopy (μ SR) and magnetic resonances (NMR/NQR). In addition, direct experience with basic characterization by electric conductivity, thermopower, magnetometry, x-rays. In the period 1998-2009 I dealt also with the synthesis of polycrystalline superconductors and manganites.

SCIENTIFIC RESPONSABILITIES

Responsible for the laboratory of synthesis of materials and transport characterization labs at the Physics Department of the University of Parma (2006-2008).

Responsible of the electric conductivity measurements lab at the Physics Department of University of Pavia (2008-2016).

Responsible of the Quantum Materials Lab at the Department of Physics and Astronomy of Bologna University (since 2017).

Responsible and PI of tens of μ SR experiments at ISIS (UK) and PSI (CH) (since 2000).

Author and co-author of more than 80 referred publications (> 40 since 2013)

<https://scholar.google.it/citations?user=gN3c3T8AAAAJ&hl=it>

PREVIOUS ITALIAN AND/OR INTERNATIONAL PROJECTS

-PRIN 2005 (2006-2008) “Coexistence of magnetism and metallicity in high-Tc oxides: theory and experiment” as Coordinator of the experimental part. (60000 Euros)

-PRIN 2006 (2007-2009) “Search for universal critical parameters in cuprate high-Tc superconductivity” as co-investigator. (90000 Euros)

-PRIN 2008 (2010-2012) "Topological effects and entanglement in magnetic molecular clusters and chains" as PI (234000 Euros)

-CARIPO foundations 2011 (2012-2014) "Microscopic studies of dissipative process in new Fe-based superconductors" as Co-investigator (90000 Euros)

-CARIPO foundations 2013 (2014-2016) "Carbon based nanostructures for innovative hydrogen storage systems" as Unit Responsible (90000 Euros)

-UNIBO Cooperation and Internationalization Program 2018-2020 on “Strategic routes for international advanced researches and training projects in Physical Sensing, Processing and Computation”, PI (19000 Euros), with partnership of Columbia (New York) and Brown (Providence) Universities.

INVITED TALKS

- 19 September 2019: “*Phase competition in superconducting oxypnictides*“, Seminar of Physics Department Programm, Brown University, Providence, USA

- 12 November 2019: “*Electron doping on Os-based double perovskites with strong spin-orbit coupling*“, International SPICE Workshop on Novel Electronic and Magnetic Phases in Correlated Spin-Orbit Coupled Oxides, 12-15 November 2019, Mainz, Germany.
- September **2018**: “*Exploring the interplay of magnetism and superconductivity in oxypnictides by impurities and chemical pressure*“, E-MRS Fall Meeting 2018, 17th - 20th September 2018, Warsaw, Poland.
- 5 September **2018**: “*The superfluid density of oxypnictides: a phenomenological overview*“, International Conference on Fluctuations and Highly Non Linear Phenomena in Superfluids and Superconductors, September 5–7, 2018, San Benedetto del Tronto (AP), Italy.
- 8 June **2018**: “*Tuning competing phases in superconducting oxypnictides*“, Seminar at the Department of Physics, Massachusetts Institute of Technology, Boston, USA.
- 25 May **2018**: “*Impurity effects in optimally doped oxypnictides*“, International Workshop on Electronic Structure of Superconductors and Novel Materials RomeSC2018 Sapienza Università di Roma 23-25 May 2018.
- 29 April **2018**: “*Phenomenological behaviour of the superfluid density of oxypnictides*“, at the 6th International Conference on Superconductivity and Magnetism- ICSM2018, Beldibi/Kemer of Antalya, Turkey.
- 17 August **2017**: “*Impurity effects in optimally doped oxypnictides*“, International Conference on Electron Correlation in Superconductors and Nanostructures (ECSN-2017), 17-20 August 2017, Odessa , Ukraine.
- 07 June **2017**: “*Extensive study of the superfluid density of oxypnictides*“, International Conference on Quantum in Complex Matter SUPERSTRIPES, 04-10 June 2017, Ischia, Italy.
- 24 June **2016**: “*Why is Manganese a poison for superconductivity in $\text{LaFeAsO}_{0.89}\text{F}_{0.11}$?*“, International Conference on Quantum in Complex Matter SUPERSTRIPES, 23-29 June 2016, Ischia, Italy.
- 27 April **2016**: “ *μSR and NMR Investigation of the Interplay Between Magnetism and Superconductivity in Optimally F-Doped $\text{RFe}_{1-x}\text{Mn}_x\text{AsO}_{0.89}\text{F}_{0.11}$* “, The 5th International conference of Magnetism and Superconductivity ICSM, 24-30 April 2016, Fethiye, Turkey.
- 23 Giugno **2015**: “*Interplay between magnetism and superconductivity in itinerant superconductors*“, Technische Universität Dresden, Germany.
- 14 June **2015**: “*Tuning the quantum critical point by Mn impurities and chemical pressure in $\text{LaFeAsO}_{0.89}\text{F}_{0.11}$* “, International Conference on Quantum in Complex Matter SUPERSTRIPES, 13-18 June 2015 Ischia.
- 18 July **2014**, “*Phenomenological behaviour of the magnetic penetration depth in 1111: a μSR study*” WORKSHOP 2014 NMR, μSR , Mössbauer spectroscopies in the study of Fe-based and other unconventional high-Tc superconductors, Leibniz-IFW Dresden, Germany, 17 – 18 July 2014.
- 13 June **2014**, “*Impurity Effect on the Interplay Between Magnetism and Superconductivity in 1111 Iron-Pnictides*“, CIMTEC 2014 - 13th International Ceramics Congress & 6th Forum on New Materials, Montecatini Terme, Italy, June 8-20, 2014.
- 30 April **2014**, “*Tuning the Superconducting and Magnetic Properties of Optimally Electron-doped 1111 Iron-Pnictides by Ru and Mn Impurities*“, 4th International Conference on Superconductivity and Magnetism- ICSM2014, Antalya between 27th April -2nd May, 2014.
- 13 December **2012**, “*Effect of spinless and magnetic impurities on the interplay between magnetism and superconductivity in optimally electron-doped oxypnictides*“, IFW Institute of Dresda (Germany) .
- 20 March **2012**, “*Correlated Trends of Magnetism and Superconductivity in Oxypnictides*“, International workshop on "Multifunctional Advanced Materials: Probe and Theory", Salerno.
- **2011**- September, “ *μSR investigation of the interplay between magnetim and superconductivity: from cuprates to oxypnictides*” International workshop JUMP2011, Paul Sherrer Institute, Villigen (CH).

- **2011**-March, “Magnetic properties of superconductors”, Facultad de Ingeniería Mecánica y Eléctrica - Universidad Autónoma de Nuevo León, Monterrey, Mexico
- **2010**-October, “Competing orders in superconducting pnictides”, International Workshop “Emergent trends in advanced correlated materials”, Capri.
- **2010**-September, “Competing orders in high T_c superconductors”, Conferenza Nazionale di Fisica, SIF, Bologna.
- **2009**-September, “Competition of magnetism and superconductivity: from cuprates to pnictides as seen by μ SR”, International Workshop on Strongly Correlated Materials: “Superconductors by the Mediterranean Sea: Classic and Novel Materials, Electronic States and Critical Properties”, Alghero, Italy, Sept 7-11 (2009).
- **2008**-December, “ μ SR results on the magnetic and superconducting properties of SmFeAsO_{1-x}F_x”, International STRIPES Conference, Roma.
- **2008**-May, “Perspective of high-pressure synthesis of Fe-based superconductors”, National workshop on Fe-based layered superconductors, CNR, Roma
- **2007**-April, “Evidence for dual band behaviour in underdoped Y_{1-x}CaxBa₂Cu₃O_{6+y}” Dipartimento di Fisica, Università di Cagliari.
- **2004**-January, “Internal fields in the coexisting superconducting and magnetically ordered state of YBa₂Cu₃O_{6+x}” Dipartimento di Fisica, Università di Parma.
- **2001**-December, “Oxygen-ordering related phenomena in oxygen-equalized pair samples of YBa₂Cu₃O_{6+k}” Dipartimento di Fisica, Università Roma “La Sapienza”

SCIENTIFIC COMMITTEE AND COORDINATION MEMBER

- July 2019: **Director of the International Summer School** on “Physical Sensing and Processing” at the University of Bologna.
- From July 2019: **Member of the Commission of Outreach & Dissemination** of Department of Physics and Astronomy at the University of Bologna.
- From 2018: **Member of the Commission of Research** of Department of Physics and Astronomy at the University of Bologna.
- From March 2017: **Member of the Advisory Board for the PhD School** in “Nanoscience for Medicine and environment” at the University of Bologna.
- 2018 April 29-May 4: **Symposium Organizer and Chair** of the session “Tuning the Physical Properties by External Strain” at the 6th International Conference on Superconductivity and Magnetism- ICSM2018, Beldibi/Kemer of Antalya, Turkey.
- 2016, April 24-30: **Symposium Organizer and Chair** of the session “*Impurities and defects: Their Role in Understanding Unconventional Superconductivity*” at the 5th International Conference on Superconductivity and Magnetism- ICSM2016, Fethiye/Blue Lagoon, Turkey.
- 2015 May - 2016 July: Member of the **Scientific Committee** of the “Centre for Health Technologies” at the Università of Pavia.
- 2014, June 1-6: **Member of the International Advisory Committee** for the 13th International Conference on “*Muon Spin Rotation, Relaxation and Resonance*”, Grindelwald, Switzerland.
- 2012 September: **Symposium Organizer** of the Section “Magnetism and Superconductivity” at the International conference of magnetism “*Joint European Magnetic Symposia, JEMS 2012*”, Parma, Italy.
- March 2008: **Co-organizer** of MICuO International Workshop: Metal Insulator Transition in Cuprates, Campus delle Scienze, Viale Usberti, Parma, Italy.

PRINCIPAL SCIENTIFIC RESULTS OBTAINED

- Correlation between structural phase transition and emergence of superconductivity in of YBCO-like superconductors [PRB2000, PRB2001]

- Study of coexistence of magnetism and superconductivity and, within unprecedented detail, of the antiferromagnetic-superconducting boundary in of YBCO-like superconductors [PRL2004, ISIS HIGHLIGHTS 2004, PRB2010].
- Detailed study of coexistence of magnetism and superconductivity on a nanometric scale at the highly debated boundary transition of oxypnictides as a function of doping and external pressure [PRB2009, PRB2010Rapid, PRB2011Rapid].
- Role of rare earth and Fe fluctuations in superconducting oxypnictides [PRB2010Rapid].
- Study of effect of impurities in optimally doped oxypnictides [PRL2011, PRB2012, PRB2013, PRB2014, PRL2015, PRB2017, PRB2018].
- Design of microwave resonators for strong collective coupling with spin ensembles and nanomagnets [APL2015].
- NMR study on Dynamics of Hydrogen in graphene [J. Phys. Chem. C 2014] and Li-fullerites [Carbon2016, JPhysChem2017].
- Tunnelling effect and spin fluctuation dynamics in entangled nanomagnets [PRB2017].

Bologna, 11, September 2020

PUBLICATIONS

- T-O, OII-OIII AND OIII-OI *phase boundary in oxygen-chain-equalised and order-stabilised polycrystalline pair samples of $YBa_2Cu_3O_{6+x}$* , G.Calestani, P.Manca, S.Sanna, A.Migliori, **Int. J. Mod. Phys. B** 13 (1999) 1073
- Effect of CuO chains ordering on the opening of the spin-gap in $YBa_2Cu_3O_{6+x}$, P.Carretta, P.Manca, S.Sanna **Int. J. Mod. Phys. B** 13 (1999) 1221
- *Critical chain length and superconductivity emergence in oxygen-equalised pairs of $YBa_2Cu_3O_{6.30}$* , P.Manca, S.Sanna, G.Calestani, A.Migliori, R.De Renzi, G.Allodi **Phys. Rev. B** 61 (2000) 15450
- *The role of Cu-O chain length on superconductivity emergence in $YBa_2Cu_3O_{6.30}$* , P.Manca, S.Sanna, G.Calestani, A.Migliori, R.De Renzi, G.Allodi, **Int. J. Mod. Phys. B** 14 (2000) 2858
- *The anisotropic in plain Cu-O strain and the stripe quantum critical point in $YBa_2Cu_3O_{6+k}$* , S.Sanna, P.Manca, S.Agrestini, N.L.Saini and A.Bianconi, **Int. J. Phys. Mod. B** 14 (2000) 3668
- *Orthorombic low-temperature superstructures in $YBa_2Cu_3O_{6+x}$* , P.Manca, S.Sanna, G.Calestani, A. Migliori, S.Lapinskas, E.E.Tornau, **Phys. Rev. B** 63 (2001) 134512
- *Charge-spin freezing and finite size scaling in $YBa_2Cu_3O_{6+x}$* , S.Sanna, P.Manca, R. De Renzi, G.Allodi, **Int. J. Mod. Phys. B** 16 (2002) 1743
- *Magnetic susceptibility of the Cluster Compounds Mo_6Se_8 and Mo_6Te_8* , G.Concas, F.Congiu, A.Geddo–Lehmann, C.Muntoni, S. Sanna, G.Spano, **Zeitschrift fur Naturforschung** Section A-A Journal of Physical Sciences. 57(5) (2002) 221
- *The freezing of spin and charge at low temperature in $YBa_2Cu_3O_{6+x}$* , S.Sanna, G.Allodi, R.De Renzi, **Solid State Comm.** 126 (2003) 85.
- *Investigation of a peaked feature in the magnetic susceptibility of $YBa_2Cu_3O_{6.30}$ samples*, Concas G. Congiu F. Lehmann AG. Sanna S. **Zeitschrift fur Naturforschung** Section A-A Journal of Physical Sciences. 58(9-10) (2003) 546-550.
- *The magnetization behaviour of lightly doped $YBa_2Cu_3O_{6+x}$* , S. Sanna, G. Concas, F. Congiu and A. Geddo Lehmann, **Journal of Magnetism and Magnetic Materials**, 272-276P2 (2004) 1325.
- *Magnetism and superconductivity in $YBa_2Cu_3O_{6.41}$* , S. Sanna, G. Allodi, R. De Renzi, **Journal of Magnetism and Magnetic Materials**, 272-276P1 (2004) 142.
- “*Nanoscopic coexistence of magnetism and superconductivity in $YBa_2Cu_3O_{6+x}$ detected by muon spin rotation.*”, S. Sanna, G. Allodi, G. Concas, A. D. Hillier, and R. De Renzi, **Phys. Rev. Lett.** 93, 207001 (2004).
- “*Electro-Conducting Properties of Charge-Transfer Salts based on Cationic and Anionic Platinum Dithiolenes*” P.Deplano, M.L. Mercuri, L.Marchiò, L.Pilia, M.Salidu, A.Serpe, F.Congiu, and S.Sanna, **Eur. J. Inorg. Chem.** 1829 (2005).
- “*The underdoped region of the phase diagram of $YBa_2Cu_3O_{6+x}$* ”, S. Sanna, G.Concas, G.Allodi, R.De Renzi, **J. Supercond.**, 18, 769 (2005), ISSN: 0896-1107 (Paper) 1572-9605 (Online).
- “*Magnetic cluster in superconducting lightly doped $YBa_2Cu_3O_{6+x}$* ”, G. Allodi, S. Sanna, G. Concas, R. Caciuffo and R. De Renzi, **Physica B** 374-375, 221 (2006).
- “*Structure and characterization of $[Pt(Me_2pipdt)_2][Pt(mnt)_2]_2$ and its unusual magnetic properties*”, F.Bigoli, P.Deplano, M.L.Mercuri, L.Marchiò, L.Pilia, A.Serpe, G.Concas, F.Congiu, S.Sanna, **Chem. Phys. Lett.** 421, 361 (2006).
- “*Synthesis of bulk MgB_2 superconductors by pulsed electric current*” A.M.Locci, R.Orrù, S.Sanna, F.Congiu, G.Concas, G.Cao, **AICHe Journal**, 52, 2618 (2006).
- “*Controlling the Critical Temperature in $Mg_{1-x}Al_xB_2$* ” A.Bianconi, Y.Busby, M.Fratini, V.Palmisano, L.Simonelli, M.Filippi, S.Sanna, F.Congiu, A.Saccone, M.Giovannini and S.De Negri, **J.Superconductivity and Novel Magnetism** 20, 495 (2007) (DOI 10.1007/s10948-007-0279-7)
- “*Experimental evidence of two distinct charge carriers in underdoped cuprate superconductor*” S. Sanna, F.Coneri, A.Rigoldi, G. Concas, and R. De Renzi, **Phys. Rev. B** 77, 224511 (2008) (DOI:10.1103/PhysRevB.77.224511)

2009

- “Effect of the double doping mechanism on the phase diagram of $Y_{1-x}Ca_xBa_2Cu_3O_{6+y}$ ” F. Coneri, G. Concas, S. Giblin, A. Rigoldi, S. Sanna, Roberto De Renzi, **Physica B** 404, 706 (2009) (doi:10.1016/j.physb.2008.11.193)
- “Intrinsic ferromagnetic impurity phases in $SmFeAsO_{1-x}F_x$ detected by μSR ”, S. Sanna, R. De Renzi, G. Lamura, C. Ferdeghini, A. Martinelli, A. Palenzona, M. Putti, M. Tropeano and T. Shiroka, **J. Supercond. Nov. Magn.** 22, 585 (2009) (DOI 10.1007/s10948-009-0472-y)
- “Experimental evidence of chemical-pressure-controlled superconductivity in cuprates”, S. Sanna, S. Agrestini, K. Zheng, R. De Renzi and N. L. Saini, **EPL** 86, 67007 (2009) (doi: 10.1209/0295-5075/86/67007)
- “Magnetic-superconducting phase boundary of $SmFeAsO_{1-x}F_x$ studied via muon spin rotation: Unified behavior in a pnictide family”, S. Sanna, R. De Renzi, G. Lamura, C. Ferdeghini, A. Palenzona, M. Putti, M. Tropeano, and T. Shiroka, **Phys. Rev. B** 80, 052503 (2009) (Brief Report, DOI: 10.1103/PhysRevB.80.052503)

2010

- “Magnetic states of lightly hole-doped cuprates in the clean limit as seen via zero-field muon spin spectroscopy” F. Coneri, S. Sanna, K. Zheng, J. Lord, and R. De Renzi, **Phys. Rev. B** 81 (2010) 104507 (DOI: 10.1103/PhysRevB.81.104507) “ ^{19}F NMR study of the coupling between 4f and itinerant electrons in the pnictide superconductors $SmFeAsO_{1-x}F_x$ ($0.15 \leq x \leq 0.2$)” G. Prando, P. Carretta, A. Rigamonti, S. Sanna, A. Palenzona, M. Putti, and M. Tropeano, **Phys. Rev. B** 81 (2010) 100508(R) (DOI: 10.1103/PhysRevB.81.100508)
- “Nanoscale coexistence of magnetic and superconducting states within the FeAs layers of $CeFeAsO_{1-x}F_x$ ”, S. Sanna, R. De Renzi, T. Shiroka, G. Lamura, G. Prando, P. Carretta, M. Putti, A. Martinelli, M.R. Cimberle, M. Tropeano, and A. Palenzona, **Phys. Rev. B** 82, 060508(R) (2010) (DOI:10.1103/PhysRevB.82.060508)
- “Competing orders suppressed by disorder around a hidden quantum critical point in cuprate high T_c superconductors”, S. Sanna, F. Coneri, A. Rigoldi, G. Concas, S. Giblin, R. De Renzi, **Phys. Rev. B** 82 (2010) 100503(R) (DOI: 10.1103/PhysRevB.82.100503)
- “Investigation of fluctuating diamagnetism and spin dynamics in $SmFeAsO_{1-x}F_x$ superconductors”, G. Prando, P. Carretta, A. Lascialfari, A. Rigamonti, S. Sanna, L. Romanò, A. Palenzona, M. Putti, M. Tropeano, **Adv. in Science Tech.** 75 (2010) 141 (DOI:10.4028/www.scientific.net/AST.75.141) ISI 1662-0356

2011

- “Vortex dynamics and irreversibility line in optimally doped $SmFeAsO_{0.8}F_{0.2}$ from ac susceptibility and magnetization measurements”, G. Prando, P. Carretta, R. De Renzi, S. Sanna, A. Palenzona, M. Putti, and M. Tropeano, **Phys. Rev. B** 83, 174514 (2011) (DOI:10.1103/PhysRevB.83.174514)
- “Evidence for impurity-induced frustration in La_2CuO_4 ”, P. Carretta, G. Prando, S. Sanna, R. De Renzi, C. Decorse, and P. Berthet, **Phys. Rev. B** 83, 180411(R) (2011) (DOI:10.1103/PhysRevB.83.180411)
- “Superconducting phase fluctuations in $SmFeAsO_{0.8}F_{0.2}$ from diamagnetism at a low magnetic field above T_c ”, G. Prando, A. Lascialfari, A. Rigamonti, L. Romanò, S. Sanna, M. Putti, and M. Tropeano, **Phys. Rev. B** 84, 064507 (2011) (DOI:10.1103/PhysRevB.84.064507) [5,5,6] [Hc=7]
- “Tuning of competing magnetic and superconducting phase volumes in $LaFeAsO_{0.945}F_{0.055}$ by hydrostatic pressure”, R. Khasanov, S. Sanna, G. Prando, Z. Shermadini, M. Bendele, A. Amato, P. Carretta, R. De Renzi, J. Karpinski, S. Katrych, H. Luetkens, and N. D. Zhigadlo, **Phys. Rev. B** 84, 100501(R) (2011) (DOI:10.1103/PhysRevB.84.100501)
- “Correlated Trends of Coexisting Magnetism and Superconductivity in Optimally Electron-Doped Oxy-pnictides” S. Sanna, P. Carretta, P. Bonfà, G. Prando, G. Allodi, R. De Renzi, T. Shiroka, G.

Lamura, A. Martinelli, and M. Putti, **Phys. Rev. Lett.** 107, 227003 (2011) (DOI:10.1103/PhysRevLett.107.227003)

- “Long- to short-range magnetic order in fluorine-doped CeFeAsO” T. Shiroka, G. Lamura, S. Sanna, G. Prando, R. De Renzi, M. Tropeano, M. R. Cimberle, A. Martinelli, C. Bernini, A. Palenzona, R. Fittipaldi, A. Vecchione, P. Carretta, A. S. Siri, C. Ferdeghini, and M. Putti, **Phys. Rev. B** 84, 195123 (2011) (DOI:10.1103/PhysRevB.84.195123)

2012

- “Magnetic properties of spin diluted iron pnictides from muSR and NMR in LaFe_{1-x}Ru_xAsO”, P. Bonfà, P. Carretta, S. Sanna, G. Lamura, G. Prando, A. Martinelli, A. Palenzona, M. Tropeano, M. Putti, R. De Renzi, **Phys. Rev. B** 85, 054518 (2012) (DOI:10.1103/PhysRevB.85.054518)
- “AC susceptibility investigation of vortex dynamics in nearly-optimally doped REFeAsO_{1-x}F_x superconductors (RE = La, Ce, Sm)”, G. Prando, P. Carretta, R. De Renzi, S. Sanna, H.-J. Grafe, S. Wurmehl, B. Büchner, **Phys. Rev. B** 85, 144522 (2012) (DOI: 10.1103/PhysRevB.85.144522)
- “Effect of external pressure on the magnetic properties of LnFeAsO (Ln = La, Ce, Pr, Sm)” R. De Renzi, P. Bonfà, M. Mazzani, S. Sanna, G. Prando, P. Carretta, R. Khasanov, A. Amato, H. Luetkens, M. Bendele, F. Bernardini, S. Massidda, A. Palenzona, M. Tropeano and M. Vignolo, **Supercond. Sci. Technol.** 25 084009 (2012) (DOI:10.1088/0953-2048/25/8/084009)
- “Local spin density in the Cr₇Ni antiferromagnetic molecular ring and ⁵³Cr-NMR” C M Casadei, L Bordonali, Y Furukawa, F Borsa, E Garlatti, A Lascialfari, S Carretta, S Sanna, G Timco and R Winpenny, **J. Phys.: Condens. Matter** 24, 406002 (2012) (DOI:10.1088/0953-8984/24/40/406002)
- “Muon Spectroscopy: a probe for magnetism”, S. Sanna, **Istituto Lombardo (Rend. Scienze)** 145, 121 (2012)

2013

- “Common effect of chemical and external pressures on the magnetic properties of RCoPO (R = La, Pr)”, G. Prando, P. Bonfà, G. Profeta, R. Khasanov, F. Bernardini, M. Mazzani, E. M. Brünig, A. Pal, V. P. S. Awana, H.-J. Grafe, B. Büchner, R. De Renzi, P. Carretta, and S. Sanna, **Phys. Rev. B** 87, 064401 (2013) (DOI:10.1103/PhysRevB.87.064401)
- “Phase separation at the magnetic–superconducting transition in La_{0.7}Y_{0.3}FeAsO_{1-x}F_x” Giacomo Prando, Samuele Sanna, Gianrico Lamura, Toni Shiroka, Matteo Tropeano, Andrea Palenzona, Hans-Joachim Grafe, Bernd Buchner, Pietro Carrett2, and Roberto De Renzi, **Phys. Status Solidi B** 250, 3, 599 (2013) (DOI 10.1002/pssb.201200767)
- “Relaxation dynamics in a Fe7 nanomagnet” E. Garlatti, S. Carretta, P. Santini, G. Amoretti, M. Mariani, A. Lascialfari, S. Sanna, K. Mason, J. Chang, P. Tasker, and E. K. Brechin, **Phys. Rev. B** 87, 054409 (2013) (DOI: 10.1103/PhysRevB.87.054409)
- “A magnetic glassy phase in Fe_{1+y}Se_xTe_{1-x} single crystals” G. Lamura, T. Shiroka, P. Bonfà, S. Sanna, F Bernardini, R De Renzi, R Viennois, E Giannini, A Piriou, N Emery, M R Cimberle and M Putti, **J. Phys.: Condens. Matter** 25, 156004 (2013) (DOI:10.1088/0953-8984/25/15/156004)
- “Onset of magnetism in optimally electron-doped LFe_{1-x}Ru_xAsO_{1-y}F_y (L= La, Nd, or Sm) superconductors around x= 1/4”, S. Sanna, P. Carretta, R. De Renzi, G. Prando, P. Bonfà, M. Mazzani, G. Lamura, T. Shiroka, Y. Kobayashi, M. Sato, **Phys. Rev. B** 87, 134518 (2013) (DOI:10.1103/PhysRevB.87.134518)
- “Role of in-plane and out-of-plane dilution in CeFeAsO: Charge doping versus disorder”, G. Prando, O. Vakaliuk, S. Sanna, G. Lamura, T. Shiroka, P. Bonfà, P. Carretta, R. De Renzi, H.-H. Klauss, C.G.F. Blum, S. Wurmehl, C. Hess, B. Büchner, **Phys. Rev. B** 87, 174519 (2013) (DOI:10.1103/PhysRevB.87.174519)
- “Structural properties and phase diagram of the LaFe_{1-x}Ru_xAsO system”, A. Martinelli, A. Palenzona, I. Pallecchi, C. Ferdeghini, M. Putti, S. Sanna, C. Curfs, C. Ritter, **J. Phys.: Condens. Matter** 25, 395701 (2013) ([doi:10.1088/0953-8984/25/39/395701](https://doi.org/10.1088/0953-8984/25/39/395701))

- “*s-wave pairing in the optimally doped LaO_{0.5}F_{0.5}BiS₂ superconductor*”, G. Lamura, T. Shiroka, P. Bonfà, S. Sanna, R. De Renzi, C. Baines, H. Luetkens, J. Kajitani, Y. Mizuguchi, O. Miura, K. Deguchi, S. Demura, Y. Takano, and M. Putti, **Phys. Rev. B** 88, 180509(R) (2013).
- “*A view from inside iron-based superconductors*”, P Carretta, R De Renzi, G Prando and S Sanna, **Phys. Scripta** 88 (2013) 068504 (Review Article) (doi:10.1088/0031-8949/88/06/068504)

2014

- “*Soft x-rays absorption and high-resolution powder x-ray diffraction study of superconducting Ca_xLa_{1-x}Ba_{1.75-x}La_{0.25+x}Cu₃O_y system*”, S. Agrestini, S. Sanna, K. Zheng, R. De Renzi, E. Pusceddu, G. Concas, N. L. Saini, and A. Bianconi, **J. Physics and Chemistry of Solids** 75, 259–264 (2014) (DOI:10.1016/j.jpcs.2013.09.026, <http://authors.elsevier.com/sd/article/S0022369713003375>)
- “*Poisoning effect of Mn in LaFe_{1-x}Mn_xAsO_{0.89}F_{0.11}: Unveiling a quantum critical point in the phase diagram of iron-based superconductors*”, F. Hammerath, P. Bonfà, S. Sanna, G. Prando, R. De Renzi, Y. Kobayashi, M. Sato, and P. Carretta, **Phys. Rev. B** 89, 134503 (2014) (DOI: [10.1103/PhysRevB.89.134503](https://doi.org/10.1103/PhysRevB.89.134503))
- “*Tracking the Hydrogen Motion in Defective Graphene*” D. Pontiroli, M. Aramini, M. Gaboardi, M. Mazzani, S. Sanna, F. Caracciolo, P. Carretta, C. Cavallari, S. Rols, R. Tatti, L. Aversa, R. Verucchi, and M. Riccò, **J. Phys. Chem. C** 118, 7110 (2014) (dx.doi.org/10.1021/jp408339m)
- “*⁷⁵As NQR signature of the isoelectronic nature of ruthenium for iron substitution in LaFe_{1-x}Ru_xAsO*”, M. Mazzani, P. Bonfà, G. Allodi, S. Sanna, A. Martinelli, A. Palenzona, P. Manfrinetti, M. Putti, and R. De Renzi, **Phys. Status Solidi B** 251, 974 (2014) (DOI 10.1002/pssb.201350237)
- “*Spin gap in the single spin-1/2 chain cuprate Sr_{1.9}Ca_{0.1}CuO₃*”, F. Hammerath, E. M. Bruning, S. Sanna, Y. Utz, N. S. Beesetty, R. Saint-Martin, A. Revcolevschi, C. Hess, B. Buchner, and H.-J. Grafe, **Phys. Rev. B** 89, 184410 (2014) (DOI: 10.1103/PhysRevB.89.184410)
- “*Band filling effect on polaron localization in La_{1-x}(Ca_ySr_{1-y})_xMnO₃ manganites*”, G. Allodi, R. De Renzi, K. Zheng, S. Sanna, A. Sidorenko, C. Baumann, L. Righi, F. Orlandi and G. Calestani, **J. Phys.: Condens. Matter** 26, 266004 (2014) (doi:10.1088/0953-8984/26/26/266004)
- “*Crossover between magnetism and superconductivity in LaFeAsO with low H-doping level*”, G. Lamura, T. Shiroka, P. Bonfà, S. Sanna, R. De Renzi, F. Cagliaris, M. R Cimberle, S. Iimura, H. Hosono and M. Putti, **J. Phys.: Condens. Matter** 26, 295701 (2014) (doi: [10.1088/0953-8984/26/29/295701](https://doi.org/10.1088/0953-8984/26/29/295701))
- “*Tuning the magnetic and structural phase transitions of PrFeAsO via Fe/Ru spin dilution*”, Y. Yiu, P. Bonfà, S. Sanna, R. De Renzi, P. Carretta, M. A. McGuire, A. Huq, and S. E. Nagler, **Phys. Rev. B** 90, 064515 (2014) (DOI: 10.1103/PhysRevB.90.064515)

2015

- “*Slow magnetic fluctuations and superconductivity in fluorine-doped NdFeAsO*”, G. Lamura, T. Shiroka, P. Bonfà, S. Sanna, R. De Renzi, M. Putti, N. D. Zhigadlo, S. Katrych, R. Khasanov, and J. Karpinski, **Phys. Rev. B** 91, 024513 (2015) (DOI: 10.1103/PhysRevB.91.024513)
- “*Effect of external pressure on the magnetic properties of RCoAsO (R=La, Pr, Sm): a muSR study*”, G. Prando, S. Sanna, R. Khasanov, A. Pal, E.M. Brünig, M. Mazzani, V.P.S. Awana, B. Büchner, R. De Renzi, **J. Phys. Chem. Solids** 84, 63 (2015), (<http://dx.doi.org/10.1016/j.jpcs.2015.01.012>)
- “*Mutual independence of critical temperature and superfluid density under pressure in optimally electron-doped superconducting LaFeAsO_{1-x}F_x*”, G. Prando, Th. Hartmann, W. Schottenhamel, Z. Guguchia, S. Sanna, F. Ahn, I. Nekrasov, C. F. B. Blum, A. U. B. Wolter, S. Wurmehl, R. Khasanov, I. Eremin, and B. Buchner, **Phys. Rev. Lett.** 114, 247004 (2015) (DOI: 10.1103/PhysRevLett.114.247004).

- “YBCO microwave resonators for strong collective coupling with spin ensembles”, A. Ghirri, C. Bonizzoni, D. Gerace, S. Sanna, A. Cassinese, and M. Affronte, **App. Phys. Lett.** 106, 184101 (2015) (DOI: 10.1063/1.4920930).
- “Sensitivity of angle-resolved photoemission to short-range antiferromagnetic correlations”, R. Wallauer, S. Sanna, E. Lahoud, P. Carretta, and A. Kanigel, **Phys. Rev. B** 91, 245149 (2015) (DOI: 10.1103/PhysRevB.91.245149).
- “Evidence of local structural order and spin-lattice coupling in the frustrated pyrochlore $Y_2Ru_2O_7$ ”, C. Castellano, G. Berti, S. Sanna, R. Ruiz-Bustos, J. van Duijn, A. Brambilla, Á. Muñoz-Noval, P. Carretta, L. Duò, F. Demartin, **Phys. Rev. B** 91, 224101 (2015) (DOI: 10.1103/PhysRevB.91.224101).
- “Enhancement of low-frequency fluctuations and superconductivity breakdown in Mn-doped $La_{1-y}Y_yFeAsO_{0.89}F_{0.11}$ superconductors”, F. Hammerath, M. Moroni, L. Bossoni, S. Sanna, R. Kappenberger, S. Wurmehl, A. U. B. Wolter, A. Afrassa, Y. Kobayashi, M. Sato, B. Buchner, and P. Carretta, **Phys. Rev. B** 92, 020505(R) (2015) (DOI: 10.1103/PhysRevB.92.020505)
- “Common effect of chemical and external pressures on the magnetic properties of $RCoPO$ ($R = La, Pr, Nd, Sm$). II.”, G. Prando, G. Profeta, A. Continenza, R. Khasanov, A. Pal, V. P. S. Awana, B. Buchner, and S. Sanna, **Phys. Rev. B** 92, 144414 (2015) (DOI: 10.1103/PhysRevB.92.144414)
- “Evidence of a correlation between magnetic and structural transitions in $Y_{2-x}Zn_xRu_2O_7$ pyrochlore compounds”, G. Berti, S. Sanna, R. Ruiz-Bustos, J. van Duijn, A. Brambilla, A. Muñoz-Noval, F. Demartin, L. Duò, Carlo Castellano, **RSC Adv.** 5, 100809 (2015) (DOI: 10.1039/c5ra20878e).

2016

- “Investigation of Li and H dynamics in Li_6C_{60} and $Li_6C_{60}H_y$ ”, L. Maidich, D. Pontiroli, M. Gaboardi, S. Lenti, G. Magnani, G. Riva, P. Carretta, C. Milanese, A. Marini, M. Riccò, S. Sanna, **Carbon** 96 276, (2016) (DOI: 10.1016/j.carbon.2015.09.064)
- “Effects of extremely low frequency magnetotherapy on proliferation of human dermal fibroblasts”, F. Pasi, S. Sanna, A. Paolini, M. Alquati, A. Lascialfari, M.E. Corti, R. Di Liberto, F. Cialdai, M. Monici, R. Nano, **Electromagnetic Biology and Medicine** 2016 <http://dx.doi.org/10.3109/15368378.2016.1138123>
- “Observation of Mixed Valence Ru Components in Zn Doped $Y_2Ru_2O_7$ Pyrochlores”, G. Berti, S. Sanna, C. Castellano, J. Van Duijn, R. Ruiz-Bustos, L. Bordonali, G. Bussetti, A. Calloni, F. Demartin, L. Duò, and A. Brambilla, **J. Phys. Chem. C** DOI: 10.1021/acs.jpcc.5b12411
- “Persistence of slow dynamics in $Tb(OETAP)_2$ single molecule magnets embedded in conducting polymers”, T. Orlando, M. Filibian, S. Sanna, N. Gimenez-Agullo, C. Saenz de Pipaon, P. Ballester, J.R. Galan-Mascaros, P. Carretta, **J. Phys. Cond. Matter.** 28, 386002 (2016) (DOI: [doi:10.1088/0953-8984/28/38/386002](https://doi.org/10.1088/0953-8984/28/38/386002)).
- “Competing effects of Mn and Y doping on the low-energy excitations and phase diagram of $La_{1-y}Y_yFe_{1-x}Mn_xAsO_{0.89}F_{0.11}$ iron-based superconductors”, M. Moroni, S. Sanna, G. Lamura, T. Shiroka, R. De Renzi, R. Kappenberger, M.A. Afrassa, S. Wurmehl, A.U.B. Wolter, B. Buchner and P. Carretta, **Phys. Rev. B** 94, 054508 (2016) (DOI: [10.1103/PhysRevB.94.054508](https://doi.org/10.1103/PhysRevB.94.054508)).
- “Role of magnetic dopants in the phase diagram of Sm 1111 pnictides: The case of Mn”, G. Lamura, T. Shiroka, S. Bordignon, S. Sanna, M. Moroni, R. De Renzi, P. Carretta, P. K. Biswas, F. Cagliaris, M. Putti, S. Wurmehl, S. J. Singh, J. Shimoyama, M. N. Gastiasoro, and B. M. Andersen, **Phys. Rev. B** 94, 214517 (2016) (DOI: 10.1103/PhysRevB.94.214517).

2017

- “Fast recovery of the stripe magnetic order by Mn/Fe substitution in F-doped $LaFeAsO$ superconductors”, M. Moroni, P. Carretta, G. Allodi, R. De Renzi, M. N. Gastiasoro, B. M. Andersen, P. Materne, H.-H. Klauss, Y. Kobayashi, M. Sato, and S. Sanna, **Phys. Rev. B** 95, 180501(R) (2017) (DOI: 10.1103/PhysRevB.95.180501)

- “*Molecular and Ionic Dynamics in $Na_xLi_{6-x}C_{60}$* ”, N. Sarzi Amadè, D. Pontiroli, L. Maidich, M. Riccò, M. Gaboardi, G. Magnani, P. Carretta, and S. Sanna, **J. Phys. Chem. C** 121, 6554 (2017) (DOI: 10.1021/acs.jpcc.7b00887)
- “*H and Li dynamics in $Li_{12}C_{60}$ and $Li_{12}C_{60}H_y$* ”, N. Sarzi Amadè, M. Gaboardi, G. Magnani, M. Riccò, D. Pontiroli, C. Milanese, A. Girella, P. Carretta, S. Sanna, **Int. J. of Hydrogen Energy** 42, 22544 (2017) (DOI: <http://dx.doi.org/10.1016/j.ijhydene.2017.02.182>)
- “*Extending the hydrogen storage limit in fullerene*”, M. Gaboardi, N. Sarzi-Amadè, M. Aramini, C. Milanese, G. Magnani, S. Sanna, M. Riccò, D. Pontiroli, **Carbon** 120, 77 (2017) (doi: 10.1016/j.carbon.2017.05.025)
- “*Anomalous local lattice disorder and distortion in $A_2Mo_2O_7$ pyrochlore*”, C. Castellano, G. Berti, F. Rubio-Marcos, G. Lamura, S. Sanna, E. Salas-Colera, A. Brambilla, A. Muñoz-Noval, L. Duo, F. Demartin, **Journal of Alloys and Compounds** 723, 327 (2017) (<http://dx.doi.org/10.1016/j.jallcom.2017.06.272>)
- “*Low-field spin dynamics of Cr_7Ni and $Cr_7Ni-Cu-Cr_7Ni$ molecular rings as detected by μSR* ”, S. Sanna, P. Arosio, L. Bordonali, F. Adelnia, M. Mariani, E. Garlatti, C. Baines, A. Amato, K. P. V. Sabareesh, G. Timco, R. E. P. Winpenney, S. J. Blundell, and A. Lascialfari, **Phys. Rev. B** 96, 184403 (2017) (doi: 10.1103/PhysRevB.96.184403)

2018

- “*Impact of concomitant Y and Mn substitution on superconductivity in $La_{1-y}Y_yFe_{1-x}Mn_xAsO_{0.89}F_{0.11}$* ”, R. Kappenberger, F. Hammerath, P. Rouse, M. A. Afrassa, M. H. Haghighi, S. Kamusella, G. Prando, G. Lamura, A. U. B. Wolter, M. Moroni, S. Sanna, P. Carretta, C. Hess, H.-J. Grafe, H.-H. Klauss, S. Wurmehl, and B. Büchner, **Phys. Rev. B** 97, 054522 (2018) (doi: 10.1103/PhysRevB.97.054522)
- “*Effect of the external pressure at the crossover between magnetism and superconductivity in $LnFeAsO_{1-x}F_x$ ($Ln = La, La_{0.7}Y_{0.3}, Ce$) superconductors*”, S. Sanna, G. Prando, R. Khasanov, P. Carretta, A. Amato, H. Luetkens, M. Putti, A. Martinelli, R. De Renzi, **Int. Journal of Modern Physics B** 32, 1840018 (2018) (doi: 10.1142/S0217979218400180)
- “*Spin Dynamics in the Single-Ion Magnet $[Er(W_5O_{18})_2]^{9-}$* ”, M. Mariani, F. Borsa, M. J. Graf, S. Sanna, M. Filibian, T. Orlando, K. P. V. Sabareesh, S. Cardona, E. Coronado, A. Lascialfari, **Phys. Rev. B** 97, 144414 (2018) (doi: 10.1103/PhysRevB.97.144414)

2019

- “*Structural and magnetic properties of the $Yb_2Pd_2(In_{1-x}Sn_x)$ system: a synchrotron X-ray and neutron powder diffraction investigation*”, Alberto Martinelli, Samuele Sanna, Gianrico Lamura, Clemens Ritter, Boby Joseph, Ernst Bauer, M Giovannini, **J. Phys.: Condens. Matter** 31, 385802 (2019) (doi: 10.1088/1361-648X/ab2b83)
- “*Fast recovery of the pristine magnetic and structural phases in superconducting $LaFeAsO_{0.89}F_{0.11}$ by Mn/Fe substitution*”, S Sanna, P Carretta, M Moroni, G Prando, P Bonfà, G Allodi, R De Renzi, A Martinelli, **J. Phys.: Condens. Matter** 31, 174002 (2019) (doi: 10.1088/1361-648X/ab0234)
- “*Singling out the effect of quenched disorder in the phase diagram of cuprates*”, Roberto De Renzi, Francesco Coneri, Francesco Mezzadri, Giuseppe Allodi, Gianluca Calestani, Lara Righi, Giorgia M Lopez, Vincenzo Fiorentini, Alessio Filippetti, Samuele Sanna, **J. Phys.: Condens. Matter** 31, 184002 (2019) (doi: 10.1088/1361-648X/ab053c)
- “*NMR and μ^+SR detection of unconventional spin dynamics in $Er(trensal)$ and $Dy(trensal)$ molecular magnets*”, E. Lucaccini, L. Sorace, F. Adelnia, S. Sanna, P. Arosio, M. Mariani, S. Carretta, Z. Salman, F. Borsa, A.Lascialfari, accepted for publication in **Phys. Rev. B**.

2020

- “*Pressure-induced antiferromagnetic dome in the heavy-fermion $Yb_2Pd_2In_{1-x}Sn_x$ system*”, G Lamura, IJ Onuorah, P Bonfà, S Sanna, Z Shermadini, R Khasanov, J-C Orain, C Baines, F Gastaldo, M Giovannini, I Čurlík, A Dzubinska, G Pristas, M Reiffers, A Martinelli, C Ritter, B Joseph, E Bauer,

- R De Renzi, T Shiroka, **Phys. Rev. B** 101, 054410 (2020)
(<https://doi.org/10.1103/PhysRevB.101.054410>)
- “Doping Evolution of the Local Electronic and Structural Properties of the Double Perovskite $Ba_2Na_{1-x}Ca_xOsO_6$ ”, Jagadesh Kopula Kesavan, Dario Fiore Mosca, Samuele Sanna, Francesco Borgatti, Götz Schuck, Phuong Minh Tran, Patrick M. Woodward, Vesna F. Mitrović, Cesare Franchini, and Federico Boscherini, **J. Phys. Chem. C** 124, 16577–16585 (2020)
(<https://doi.org/10.1021/acs.jpcc.0c04807>)

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<https://www.unibo.it/sitoweb/s.sanna/publications>