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Education

- *Agregação* (Habilitation), Physics, Instituto Superior Técnico, Lisboa, May 2005
- Ph.D., Physics, Instituto Superior Técnico, Lisboa, June 1997
- *Licenciatura*, Physics Engineering, Instituto Superior Técnico, Lisboa, June 1992

Research Interests and Expertise

- Plasma Theory and Simulations, extreme plasma physics, plasma astrophysics, laboratory astrophysics, laser-plasma accelerators, basic plasma physics, plasma simulations, high performance computing

Appointments

- 2013 – present, President, Scientific Council, Instituto Superior Técnico, 2013 –
- 2012 – 2015, Member, National Council of Science & Technology (chaired by the Prime-Minister of Portugal)
- 2010 – present, Professor of Physics, Instituto Superior Técnico
- 2009, Member, Kavli Institute for Theoretical Physics, University of California Santa Barbara
- 2006 –2014, Fellow, Centre for Fundamental Physics, Rutherford Appleton Laboratory
- 2006 – present, Scientific Coordinator, Group for Lasers and Plasmas
- 2006 – 2009, President, Center for Plasma Physics, Instituto Superior Técnico
- 2005 – 2010, Associate Professor of Physics, Instituto Superior Técnico
- 2001 – 2005, Assistant Professor of Physics, Instituto Superior Técnico
- 1997 – 2000 Postdoctoral Fellow, University of California, Los Angeles

Honors/Awards

- *Grande Oficial da Ordem da Instrução Pública*, 2016, awarded by the President of the Portuguese Republic due to services to Higher Education in Portugal
- *Sócio correspondente*, Academy of Sciences of Lisbon, Class of Sciences, Section of Physics, 2019
- Fellow, European Academy of Sciences, 2019 (Division of Physics)
- Fellow, European Physical Society, 2017, with the citation: *For his outstanding theoretical and numerical contributions in laser plasma interaction in the relativistic regime.*
- Advanced Grant, European Research Council, 2015
- Science Prize of the Technical University of Lisbon, 2011: *To the Professors/Researchers of the Technical University of Lisbon with very high number and impact of scientific publications in*

international peer reviewed journals

- *Distinção por Mérito* by the Rector of the Technical University of Lisbon, 2011, *Awarded by the contributions in the field of Physics, towards the scientific knowledge and the national and international visibility of the UTL*
- Advanced Grant, European Research Council, 2010
- Elected Member, Global Young Academy, 2010 (now *alumni*)
- Member, World Economic Forum, 2010
- Young Scientist, Summer Davos 2009: *Each year the World Economic Forum recognizes outstanding researchers under the age of 40 who are pioneering new fields and leading in the pursuit of answers for global impact and the common good.*
- Fellow, American Physical Society, 2009, with the citation: *For significant contributions to the understanding of the complex interaction of relativistic laser and particle beams with laboratory and astrophysical plasmas.*
- IBM Science Prize, 2003
- Abdus Salam International Center for Theoretical Physics Medal for Excellence in Nonlinear Plasma Physics by a Young Researcher, 2001, with the citation: *For outstanding contributions to understand the interaction of ultra intense fields with plasmas in extreme astrophysical and laboratory scenarios*
- Gulbenkian Prize for Young Researchers, 1996

Plenary, Keynote, Invited Talks, and Colloquia/Seminars (selection)

- Plenary, Keynote and Invited talks at the most important conferences and workshops in plasma physics, plasma accelerators, laboratory astrophysics, and high energy density physics in Europe, US, Japan, and China
- Named Lectures, colloquia and research seminars at the most important departments in my field including (selection) MIT, University of Michigan, University of Wisconsin, Stanford University, Princeton University, University of California Los Angeles, Harvard University, Columbia University (USA), Weizmann Institute of Science (Israel), EPFL (Switzerland), Chalmers (Sweden), U. Bologna (Italy), École Polytechnique (France), University of Oxford, Imperial College, Rutherford Appleton Laboratory, Cockcroft Institute (UK), Tsinghua University, Shanghai Jiao Tong University (China), Max Planck Institute for Quantum Optics (Germany)

PI of research grants (selection)

- Advanced Grant of the European Research Council INPAIRS (In Silico Pair Plasmas: from ultra intense lasers to relativistic astrophysics in the laboratory, ERC-2015-AdG) selected in 2016 in Physical Sciences and Engineering (PE2: Fundamental Constituents of Matter), 2016 – 2021;
- Advanced Grant of the European Research Council ACCELERATES (Acceleration in Extreme Shocks: from the microphysics to laboratory and astrophysical scenarios, ERC-2010-AdG 267841) selected in 2010 in Physical Sciences and Engineering (PE2: Fundamental Constituents of Matter), 2011– 2016;
- Several proposals in calls (1st regular call to now) of the *Partnership for Advanced Computing in Europe* for a total of more than 275 CPU core *hours on several supercomputers in Europe;

- Coordinator of the Joint Research Activity CHARPAC (Charge particle acceleration of electrons and ions), involving 15 European teams, in the frame of the project F³ Laserlab Europe III;
- Several projects with NVIDIA, European Space Agency, EU H2020-FP7-FP6, and the Portuguese Science Foundation.

Synergistic Activities (selection)

- Member, Editorial Board of the Journal of Plasma Physics, 2015 – present;
- Associate Editor, Plasma Physics and Controlled Fusion, 2012 - 2016;
- Observer, EuroHPC Research and Innovation Advisory Group, Belgium, 2019 – present, nominated by the EU;
- Guest Editor, Journal of Plasma Physics (Special Issue on Photon Science), 2010;
- Member, International Advisory Scientific Committee, ELI Beamlines, Czech Republic, 2011 – present;
- Member, Scientific Steering Committee, Partnership for Advanced Computing in Europe, Belgium, 2010 – 2016;
- Member, IBM Prize selection committee, 2013 – present;
- Chair, John Dawson PhD Thesis Prize, 2009 (member, since then);
- Chair, SPIE Conferences 2011, 2013, 2015, 2017, 2019 on ELI, Prague, Czech Republic, HEDLA 2020, ICHED 2011, Lisbon, Portugal, LPAW 2009, Azores, Portugal;
- Member, Programme / Advisory / Selection Committee of several conferences, workshops, funding agencies, and universities (covering grants, faculty appointments, computer time, conference programs) on Plasma Physics, Advanced Accelerators, Plasma Astrophysics, Relativistic Astrophysics, Fast ignition, High Energy Density Science in Europe, US and Asia;
- Referee, Nat. Phys, Nat. Comm., Nat. Photonics, Physical Review Letters, Astrophysical Journal Letters, etc.

Outreach (summary)

- I contribute a regular column to the national newspaper i, 2017 – ; all the articles, covering a wide range of topics in physics, can be found here (in Portuguese) https://medium.com/@luis_os;
- My team develops and participates in several outreach events, interaction with the media, and public sessions (> 10/year), including VR/multimedia events, training for high school teachers, interviews for national and international media outlets, and contributions with movies/pictures for outreach activities of PRACE, ERC, IST, ULisboa, and other national and international institutions (examples are included in the webpage of my team <http://epp.tecnico.ulisboa.pt/>).

Student Supervision (summary)

- 16 PhD Thesis supervised and 8 post- doctoral fellows mentored; Right after: post-docs at Princeton, Stanford, LLNL, UCLA, MPI; professorships in Portugal, UK and US; scientist in supercomputing centers; permanent staff positions in France, Germany and South Korea - all have received several offers before end of PhD/post-doc, and many

have now permanent positions either in universities (*e.g.* SLAC/Stanford, Lancaster U., Bochum U., or IST) or in companies/organizations (*e.g.* Critical Software, Bill and Melinda Gates Foundation);

- 5 Postdoctoral mentees and 4 PhD supervisions in progress;
- Several of my PhD students have received national and international prizes and awards for their research work in my team.

Publications (summary)

- Full list of publications here <http://epp.tecnico.ulisboa.pt/los/>
- More than 220 papers in refereed journals, including 1 Nature, 6 Nature Physics, 4 Nature Communications, 1 Proceedings of the National Academy of Sciences USA, 32 Physical Review Letters, 6 Astrophysical Journal Letters, 6 New Journal of Physics, 23 PoP, 18 PPCF, 17 Phys Rev A/D/E/ST-AB | Citations > 12000 | h-index = 53 | Citations/year after 2017 ~1200 (Google Scholar) | 3 patents

Selected Publications

- V. Yakimenko, S. Meuren, F. Del Gaudio, C. Baumann, A. Fedotov, F. Fiuza, T. Grismayer, M.J. Hogan, A. Pukhov, L. O. Silva, G. White, Prospect of Studying Nonperturbative QED with Beam-Beam Collisions, Physical Review Letters 122, 190404 (2019)
- T. Grismayer, M. Vranic, J. L. Martins, R. A. Fonseca, L. O. Silva, Seeded QED cascades in counterpropagating laser pulses, Physical Review E 95, 023210 (2017)
- J. Vieira, R.M.G.M. Trines, E.P. Alves, R.A. Fonseca, J.T. Mendonça, R. Bingham, P. Norreys & L.O. Silva, Amplification and generation of ultra-intense twisted laser pulses via stimulated Raman scattering, Nature Communications 7, 10371 (2016)
- M Vranic, JL Martins, J Vieira, RA Fonseca, LO Silva, All optical radiation reaction at 10^{21} W/cm², Physical Review Letters 113, 134801 (2014)
- T. Grismayer, E. P. Alves, R. A. Fonseca, L. O. Silva, dc-Magnetic-Field Generation in Unmagnetized Shear Flows, Physical Review Letters 111, 15005 (2013)
- F. Fiuza, R. A. Fonseca, J. Tonge, W. B. Mori, L. O. Silva, Weibel-Instability-Mediated Collisionless Shocks in the Laboratory with Ultraintense Lasers, Physical Review Letters 108, 235004 (2012)
- S. F. Martins, R. A. Fonseca, W. Lu, W. B. Mori, and L. O. Silva, Exploring laser-wakefield-accelerator regimes for near-term lasers using particle-in-cell simulation in Lorentz-boosted frames, Nature Physics 6, 311 (2010)
- L. O. Silva, M. Marti, J. R. Davies, R. A. Fonseca, C. Ren, F. Tsung and W. B. Mori, Proton shock acceleration in laser-plasma interactions, Physical Review Letters 92, 015002 (2004)
- L. O. Silva, R. A. Fonseca, J. W. Tonge, J. M. Dawson, W. B. Mori, M. Medvedev, Interpenetrating plasma shells: near-equipartition magnetic generation and non-thermal particle acceleration, Astrophysical Journal Letters 596, L121 (2003)
- R. A. Fonseca, L. O. Silva, R. G. Hemker, F. S. Tsung, V. K. Decyk, W. Lu, C. Ren, W. B. Mori, S. Deng, T. Katsouleas, and J.C. Adam, Osiris: a three-dimensional fully relativistic particle in cell code for modeling plasma based accelerators, Lecture Notes on Computer Science 2329, III-342 (Springer-Verlag, Heidelberg, 2002)