Rogerio Jorge

Birth Date: 12 April 1992
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Address: IREAP, University of Maryland, 8279 Paint Branch Drive, College Park, MD 20742, USA

Employment

2019 - Present **Postdoctoral Research Associate**
Institute for Research in Electronics and Applied Physics (IREAP), University of Maryland (UMD), USA
Member of the *Hidden Symmetries and Fusion Energy* project, funded by the *Simons Foundation*

Education

2015 - 2019 **PhD in Physics**
Swiss Plasma Center (SPC) - EPFL, Lausanne Switzerland
Instituto de Plasmas e Fusão Nuclear (IPFN), Técnico Lisboa, IST, University of Lisbon, Portugal
Thesis Title: *"A moment-based model for plasma dynamics at arbitrary collisionality"*, Advisors: Prof. Paolo Ricci, Prof. Nuno Loureiro

2010 - 2014 **Bachelor and Master's in Engineering Physics**
Técnico Lisboa, IST, University of Lisbon, Portugal.
Thesis Title: *"Simulation of Plasma Blobs in Realistic Tokamak Geometry",* Advisors: Prof. Nuno Loureiro, Prof. Paolo Ricci, Grade 19/20

Fellowships, Awards and Distinctions

2020 **EPS-PPD Research Award**
Prize from the Plasma Physics Division of the European Physical Society granted annually in recognition of truly outstanding research achievements associated with their PhD study in the broad field of plasma physics.

2019 **Doctoral Program Thesis Distinction**
For placing on top 8% of physics EPFL PhD thesis as selected by the EDPY committee.

2018 **Publons Peer Review Award**
For placing on top 1% of reviewers in Physics on Publons' global reviewer database during the 2017-2018 Award year.

2018, 2017 **Outstanding Reviewer**
Plasma Physics and Controlled Fusion

2015 **PhD Fellowship** IST, University of Lisbon, Portugal
Funding from "Fundação para a Ciência e Tecnologia" under grant PD/BD/105979/2014

2014 **Erasmus Scholarship** Swiss Plasma Center, EPFL, Switzerland
Tokamak edge turbulence simulations applied to the ISTTOK tokamak. Funding from the European Union under a 6 months grant. **Advisor**: Prof. Paolo Ricci, EPFL

2013 **Research Internship** Laboratório de Instrumentação e Partículas (LIP), Lisbon, Portugal
Supersymmetry search at the LHC experiment at CERN. Funding from "Fundação para a Ciência e Tecnologia" under grant CERN/FP/123601/2011. **Advisor**: Dr. Pedrame Bargassa, LIP/CERN

2012 - 2013 **Scientific Initiation Studentship** IST - Mathematics Department
Point particle simulation of a fluid vortex in C++ with OpenGL visualization. Funding from University of Lisbon under grant BL89/2012_IST-ID. **Advisor**: Prof. Adélia Sequeira, IST

2011 **"Novos Talentos em Matemática" from the Calouste Gulbenkian Foundation**
1 year scholarship for undergraduate students to carry research on pure/applied mathematics.
Research Topic: String Theory. **Advisor**: Prof. Gabriel Lopes Cardoso, IST

Publications

First Author

- R. Jorge, M. Landreman, ”The Use of Near-Axis Magnetic Fields for Stellarator Turbulence Simulations”, **Plasma Phys. Control. Fusion**, 63, 014001 (2020)
- R. Jorge, W. Sengupta, M. Landreman, ”Construction of Quasisymmetric Stellarators Using a Direct Coordinate Approach”, **Nucl. Fusion**, 60, 7 (2020)
- R. Jorge, W. Sengupta, M. Landreman, ”Near-Axis Expansion at Arbitrary Order in the Distance to the Magnetic Axis”, **J. Plasma Phys.**, 86, 1 (2020)
- R. Jorge, B. Frei, P. Ricci, ”Nonlinear Gyrokinetic Coulomb Collision Operator”, **J. Plasma Phys.**, 85, 6 (2019)
- R. Jorge, P. Ricci, S. Brunner, S. Gamba, V. Konovets, N. Teixeira, L. Perrone, N. F. Loureiro, ”Linear Theory of Electron-Plasma Waves at Arbitrary Collisionality”, **J. Plasma Phys.** 85, 2 (2019)
- R. Jorge, P. Ricci, N. Loureiro, ”Theory of the Drift-Wave Instability at Arbitrary Collisionality”, **Phys. Rev. Lett.** 121, 165001 (2018)
- R. Jorge, P. Ricci, N. Loureiro, ”A Drift-Kinetic Analytical Model for SOL Plasma Dynamics at Arbitrary Collisionality”, **J. Plasma Phys.** 83, 6 (2017)
- R. Jorge, E. S. de Oliveira, J. V. Rocha, ”Superradiance of rotating cohomogeneity-1 black holes: scalar case”, Proceedings **The Fourteenth Marcel Grossmann Meeting** 1810-1815 (2017)
- R. Jorge, P. Ricci, F. Halpern, N. Loureiro, C. Silva, ”Plasma Turbulence in the Scrape-off Layer of the ISTTOK Tokamak”, **Phys. Plasmas** 23, 10 (2016)
- R. Jorge, E. Oliveira, J. Rocha, ”Greybody factors for rotating black holes in higher dimensions”, **Classical and Quantum Gravity** 32, 6 (2015)

Co-Author

- P. Kim, R. Jorge, W. Dorland, ”The On-Axis Magnetic Well and Mercier’s Criterion for Arbitrary Stellarator Geometries”, arXiv:2011.07416, submitted to *Journal of Plasma Physics* (2020)
- L. M. Perrone, R. Jorge, P. Ricci, ”Four-dimensional drift-kinetic model for scrape-off layer plasmas”, **Physics of Plasmas**, 27, 112502 (2020)
- M. Landreman, R. Jorge, ”Magnetic well and Mercier stability of stellarators near the magnetic axis”, **J. Plasma Phys.**, 86, 5 (2020)
- B. Frei, R. Jorge, P. Ricci, ”A gyrokinetic model for the plasma periphery of tokamak devices”, **J. Plasma Phys.**, 86, 2 (2020)
- J. P. S. Bizarro, H. Hugon, R. Jorge, ”Quasilinear approach to ray tracing in weakly turbulent, randomly fluctuating media”, **Phys. Rev. A** 98, 2 (2018)
- G. Cardoso, R. Jorge, S. Nampuri, ”Indefinite theta functions and black hole partition functions”, **J. High Energy Phys.** 2, 19 (2014)

Event Organization

2017, 2018 **Physics Day** EPFL, Switzerland
1-day event with talks by professors, Nobel prize winners and a poster session

2013, 2014 **Engineering Physics Career Week** IST, Portugal
3-day event devoted to physics students with talks by professors, companies and alumni

Teaching Experience

Guest Lecturer

- Classical Mechanics, Physics 410, 1st semester undergraduate studies, University of Maryland, 2020-2021
- Plasma Physics II, Physics 762, 2nd semester graduate studies, University of Maryland, 2019-2020

Teaching Assistantship

- Advanced Physics I, 1st semester Physics, EPFL 2017-2018, 2018-2019
- Mathematical Analysis 1B, 2nd semester MAN, EPFL 2017-2018
- General Physics I and II, 1st and 2nd semester Mechanical Engineering, EPFL 2016-2017, 2016-2017
- Mechanics and Waves, 1st semester Engineering Physics, IST 2015-2016

Supervision of Master's Thesis

- Lorenzo Perrone, EPFL, 2018: *"4-Dimensional Kinetic Scrape-off Layer Model"*
- Baptiste Frei, EPFL, 2018: *"A full-F Gyrokinetic Model for the Tokamak Periphery at Arbitrary Collisionality"*

Supervision of Semester Internships

- Patrick Kim, UMD, 2019: *"MHD Stability at Arbitrary Order in the Distance to the Magnetic Axis"*
- Antoine Baillod, EPFL 2017: *"Gyrokinetic Equations for Scrape-off Layer Plasmas"*
- Clara Pereira, IST, 2016: *"Magnetic Field Generation in Charged and Rotating Accretion Disks"*

Conference Contributions

Invited Talks

06/2021 **47th European Physical Society Conference on Plasma Physics, Sitges, Spain**
A moment-based model for plasma dynamics at arbitrary collisionality

10/2019 **61st Annual Meeting of the APS Division of Plasma Physics, Fort Lauderdale FL, USA**
An efficient treatment of the full Coulomb collision operator with applications

06/2019 **Platform for Advanced Scientific Computing (PASC) Conference, Zurich, Switzerland**
A Moment-Based Kinetic Model for Efficient Numerical Implementation

04/2018 **Sherwood Fusion Theory Conference, Auburn AL, USA**
A gyrokinetic model for the tokamak periphery

10/2017 **17th European Fusion Theory Meeting, Athens, Greece**
An analytical model for SOL plasma dynamics at arbitrary collisionality

Peer Review Activity

Verified reviews at Publons.com
- 19 manuscripts for Plasma Physics and Controlled Fusion
- 11 manuscripts for Nuclear Fusion
- 9 manuscripts for Journal of Plasma Physics
- 9 manuscripts for Physics of Plasmas
- 1 manuscript for Physical Review Letters
- 1 manuscript for Journal of Fusion Energy

Languages

Portuguese	native speaker
English	fluent
French	proficient

Other Activities

2021 **APS-DPP Fundamental Plasma Physics subcommittee** American Physical Society
Recommend Invited, Review and Tutorial talks in the area and provide help sorting abstracts and optimizing the schedule of the 63rd APS-DPP annual meeting.

2020 - 2021 **Senator of the Postdoc/Faculty Assistant Community** University of Maryland at College Park, USA
The University Senate at UMD

2017 - 2018 **Physics PhD Student Representative** EPFL, Switzerland
EPFL Doctoral Program in Physics (EDPY)

2017 - 2018 **Member of the Working Group for Teaching Assistantship** EPFL, Switzerland
As PhD student representative, define the implementation of a directive concerning the attribution of ECTS to teaching assistantship tasks at EPFL.

2014 - 2017 **Startup Co-founder & Web Developer** Portal da Sabedoria
Online platform to match student and tutors according to their own schedule.
University of Lisbon award: 2014/2015, 5000€ prize
youtube.com/user/matmania1

2002 - 2010 **Conservatory Degree in Classical Guitar** Conservatory of Music David de Sousa, Figueira da Foz, Portugal
Main subjects: Acoustics, Composition, Music Theory, Music History, Final Grade 18/20
1st prize classical guitar level V on the ”International Contest of Fundão, Portugal” (2009)