Diogo Aguiam

Electronics Engineer, Researcher, PhD

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Scientist and engineer with a passion for building complex new systems from scratch

EXPERIENCE

Staff Researcher - Integrated Micro and Nanotechnologies

International Iberian Nanotechnology Laboratory

Since July 2018 — Braga, Portugal

- Scientific Project Manager
- Electronic instrumentation and data processing
- Optical deisng and modelling

Microwave Diagnostics Developer - Invited Researcher

Max-Planck-Institut für Plasmaphysik

November 2015 – May 2018 — Garching, Germany

- Installation and commissioning of microwave reflectometry diagnostics for Nuclear Fusion research
- Development of density profile reconstruction codes for distributed computing cluster

Microwave Engineer - Reseacher

Instituto de Plasmas e Fusão Nuclear

February 2013 – June 2018 — Lisbon, Portugal

- Design and assembly of RF electronics systems
- Testing and validation of new microwave diagnostics

LabVIEW Developer

Department of Physics, Instituto Superior Técnico

February 2012 - July 2012 — Oeiras, Portugal

TRAINING

Open Leadership Training

Mozilla

June 2018

- OpenReflectometry: open source Python library for reflectometry data

Software Carpentry Instructor

Software Carpentry

February 2018

- Teaching basic lab skills for research computing

Nanotechnologies - Athens Programme

École Nationale Supérieure de Techniques Avancées

November 2011 — Paris, France

- Fundamentals of nano-structures, nanophotonics, spintronics and microfabrication techniques

TECHNICAL SKILLS

C/C++ & Python	●●●●●
Electronic Instrumentation	●●●●○
Signal Processing	●●●●○
Software Engineering	●●●●○
Microfabrication	●●●○○
Optical design; RF	●●●○○

Experience with:

Altium · Embedded Systems · PCB design · LabVIEW · MATLAB · Cadence · Solidworks · Zemax OtpicStudio · Git · Neural Networks

LANGUAGES

Portuguese	●●●●●
English (C2)	●●●●●
French (B1)	●●●○○
German (B1)	●●○○○

EDUCATION

Double Ph.D. in Physics Engineering

University of Ghent & Universidade de Lisboa

2014 – 2018

Thesis: Implementation of a X-mode multichannel edge density profile reflectometer for the new ICRH antenna on ASDEX Upgrade

Pass with distinction

M.Sc. in Electronics Engineering

Instituto Superior Técnico, U. Lisboa

2011 – 2013

Thesis: Heterodyning Non Destructive Testing Electronic System Based on Eddy Currents

B.Sc. in Electronics Engineering

Instituto Superior Técnico, U. Lisboa

2008 – 2011

Best in class scholarships for three years

PUBLICATIONS

Journal Articles

- Aguiam, Diogo E., Luis S. Rosado, Pedro M. Ramos, and Moisés Piedade (Sept. 2015). “Heterodyning based portable instrument for eddy currents non-destructive testing”. In: *Measurement* 73, pp. 146–157. ISSN: 02632241. DOI: 10.1016/j.measurement.2015.05.019. URL: http://www.sciencedirect.com/science/article/pii/S026322411500278X%20http://linkinghub.elsevier.com/retrieve/pii/S026322411500278X.
- Elsayed, Mohannad Yomn et al. (2015). “Surface Micromachined Combined Magnetometer/Accelerometer for Above-IC Integration”. In: *Journal of Microelectromechanical Systems* 24.4, pp. 1029–1037. ISSN: 10577157. DOI: 10.1109/JMEMS.2014.2375574.
- Aguiam, D E et al. (Nov. 2016). “Implementation of the new multichannel X-mode edge density profile reflectometer for the ICRF antenna on ASDEX Upgrade”. In: *Review of Scientific Instruments* 87.11, 11E722. ISSN: 0034-6748. DOI: 10.1063/1.4961558. URL: http://aip.scitation.org/doi/10.1063/1.4961558.
- Fuenfgelder, H. et al. (2016). “A double success story: The international cooperation to build the new ICRF antennas on ASDEX Upgrade and the results obtained”. In: *Fusion Engineering and Design*. ISSN: 09203796. DOI: 10.1016/j.fusengdes.2017.03.114.
- Aguiam, D.E. et al. (Apr. 2017). “X-mode raw data analysis of the new AUG ICRF antenna edge density profile reflectometer”. In: *Fusion Engineering and Design* 87.11, pp. 7–10. ISSN: 09203796. DOI: 10.1016/j.fusengdes.2017.04.019. URL: http://linkinghub.elsevier.com/retrieve/pii/S0920379617304222.
- Kallenbach, A et al. (2017). “Overview of ASDEX Upgrade results”. In: *NUCLEAR FUSION* 57.10. ISSN: 0029-5515. DOI: 10.1088/1741-4326/aa64f6.
- Zhang, W., W. Tierens, et al. (Nov. 2017). “Radio frequency heating induced edge plasma convection: self-consistent simulations and experiments on ASDEX Upgrade”. In: *Nuclear Fusion* 57.11, p. 116048. ISSN: 0029-5515. DOI: 10.1088/1741-4326/aa7f47. URL: http://stacks.iop.org/0029-5515/57/i=11/a=116048?key=crossref.518dc2c5e7d480994a7374aa2cf5e01c.
- Aguiam, Diogo E., Antonio Silva, et al. (May 2018). “Estimation of X-Mode Reflectometry First Fringe Frequency Using Neural Networks”. In: *IEEE Transactions on Plasma Science* 46.5, pp. 1323–1330. ISSN: 0093-3813. DOI: 10.1109/TPS.2018.2789684. URL: https://ieeexplore.ieee.org/document/8262625/.
- Blanken, T C et al. (2019). “Real-time plasma state monitoring and supervisory control on TCV”. in: *NUCLEAR FUSION* 59.2. ISSN: 0029-5515. DOI: 10.1088/1741-4326/aaf451.
- Drenik, A et al. (2019). “Evolution of nitrogen concentration and ammonia production in N-2-seeded H-mode discharges at ASDEX Upgrade”. In: *NUCLEAR FUSION* 59.4. ISSN: 0029-5515. DOI: 10.1088/1741-4326/aafe23.
- Faugel, H et al. (2019). “An overview of the in-vessel ICRF-diagnostics in the ASDEX Upgrade tokamak”. In: *FUSION ENGINEERING AND DESIGN* 146.B, SI, pp. 2557–2560. ISSN: 0920-3796. DOI: 10.1016/j.fusengdes.2019.04.040.
- Lopez, G Suarez et al. (2019). “ICRF coupling in ASDEX upgrade magnetically perturbed 3D plasmas”. In: *PLASMA PHYSICS AND CONTROLLED FUSION* 61.12. ISSN: 0741-3335. DOI: 10.1088/1361-6587/ab47a9.
- Meyer, H et al. (Nov. 2019). “Overview of physics studies on ASDEX Upgrade”. In: *NUCLEAR FUSION* 59.11. ISSN: 0029-5515. DOI: 10.1088/1741-4326/ab18b8.
- Tierens, W et al. (2019). “Validation of the ICRF antenna coupling code RAPLICASOL against TOPICA and experiments”. In: *NUCLEAR FUSION* 59.4. ISSN: 0029-5515. DOI: 10.1088/1741-4326/aaf455.
- Trier, E et al. (2019). “ELM-induced cold pulse propagation in ASDEX Upgrade”. In: *PLASMA PHYSICS AND CONTROLLED FUSION* 61.4. ISSN: 0741-3335. DOI: 10.1088/1361-6587/aaf9c3.
- Garcia, Inês S. et al. (2020). “Fabrication of a MEMS Micromirror Based on Bulk Silicon Micromachining Combined with Grayscale Lithography”. In: *Journal of Microelectromechanical Systems* 29.5, pp. 734–740. ISSN: 19410158. DOI: 10.1109/JMEMS.2020.3006746.
- Sotgiu, E. et al. (2020). “Surface Texture Detection with a New Sub-mm Resolution Flexible Tactile Capacitive Sensor Array for Multimodal Artificial Finger”. In: *Journal of Microelectromechanical Systems* 29.5. ISSN: 19410158. DOI: 10.1109/JMEMS.2020.3004584.
- Vianello, N et al. (Jan. 2020). “Scrape-off layer transport and filament characteristics in high-density tokamak regimes”. In: *NUCLEAR FUSION* 60.1. ISSN: 0029-5515. DOI: 10.1088/1741-4326/ab423e.

Conference Proceedings

- Aguiam, Diogo E., Luis S. Rosado, Pedro M. Ramos, and Moises Piedade (2014). “Portable instrument for eddy currents Non-Destructive Testing based on heterodyning techniques”. In: *2014 IEEE International Instrumentation and Measurement Technology Conference (I2MTC) Proceedings*, pp. 1368–1372. ISBN: 978-1-4673-6386-0. DOI: 10.1109/I2MTC.2014.6860970. URL: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6860970.

- Aguiam, D et al. (Nov. 2015). “Multichannel reflectometer for measuring plasma electron density profiles in front of the ICRH antenna on ASDEX Upgrade”. In: *Fusenet PhD Event*.
- Aguiam, Diogo Eloi et al. (June 2015). “Feasibility Study of a Control System based on PLC and EPICS for the ESTHER Combustion Gas Injection”. In: *PROCEEDINGS OF 2015 3RD EXPERIMENT AT INTERNATIONAL CONFERENCE (EXP AT'15)*. Experiment at International Conference. U.PORTO; Universidade De Coimbra; Governo dos acores; Governo dos acores; FCT; Ponta Delgada; Ribeira Grande; Coliseu Micaelense; REC; ExpLab; Sata; Marc; Mixtronica; RS; Controlar; HFA; Inegi; EDA; Carg Base; Courrensc; Critical; Itgrow; Ingevideo; Cuba, pp. 22–26. ISBN: 978-1-4673-7717-1. DOI: 10.1109/EXPAT.2015.7463207.
- Silva, Filipe et al. (June 2015). “REFMULF: a 2D Fullwave FDTD Maxwell Full Polarization Code”. In: *42nd European Physical Society Conference on Plasma Physics*.
- Vicente, J. et al. (2016). “Relationship between divertor collisionality and filament activity measured with reflectometry at ASDEX Upgrade”. In: *43rd European Physical Society Conference on Plasma Physics, EPS 2016*.
- Zhang, W., V. Bobkov, et al. (2017). “Recent progress on improving ICRF coupling and reducing RF-specific impurities in ASDEX Upgrade”. In: *EPJ Web of Conferences*. Vol. 157. DOI: 10.1051/epjconf/201715702013.
- Zhang, W., D. Coster, et al. (2017). “Plasma edge modelling with ICRF coupling”. In: *EPJ Web of Conferences*. Vol. 157. DOI: 10.1051/epjconf/201715703066.
- Moreira, E.E. et al. (2020). “Industry 4.0: Real-time monitoring of an injection molding tool for smart predictive maintenance”. In: *IEEE International Conference on Emerging Technologies and Factory Automation, ETFA*. vol. 2020-Septe. ISBN: 9781728189567. DOI: 10.1109/ETFA46521.2020.9212167.