André Gonçalves Torres, PhD

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PROFESSIONAL EXPERIENCE

2025 - present Post-doc at **Institute of Nuclear Physics of the Polish Academy of Sciences**, Cracow, Poland

2024 - 2024 Post-doc at **Institute of Plasma Physics of the Czech Academy of Sciences**, Prague, Czech Republic – Magnetic diagnostic final design and commissioning: sensors, cabling, data-acquisition; simulations of transmission lines and signal integrity.

2018 - 2023 Ph.D. student at **Institute of Plasma Physics of the Czech Academy of Sciences**, Prague, Czech Republic – Magnetic diagnostic system: contributions to conceptual and final design; study of frequency response of inductive sensors; development of data acquisition electronics for real-time numerical integration of signals; development and automatization of a sensor sensitivity and frequency response calibration testbench; qualification and procurement of cabling; experimental automation and data analysis.

2017 - 2018 Scratch programming instructor for the Gen10s Project, **Escola Superior de Educação, Instituto Politécnico de Setúbal**, Portugal

2016 - 2017 Trainee at **Fusion For Energy**, Barcelona, Spain – Control Data Access and Communication group: data plotter for large time-series (magnetic diagnostic data); Real-time network testing; Software quality assurance; UDP logger with GUI.

EDUCATION

2018 - 2023 Ph.D. in Engineering Physics (Advanced Programme in Plasma Science and Engineering), IPFN, **Instituto Superior Técnico** (IST), Lisbon, Portugal
- Thesis: Design and commissioning of the magnetic diagnostics system for COMPASS-U
- Result: Pass with Distinction and Honour

2016 Erasmus+ Exchange, **Technische Universität München** (TUM), Munich, Germany

2012 - 2017 Integrated Master in Engineering Physics, **Instituto Superior Técnico** (IST), Lisbon, Portugal
- Thesis: Preliminary Design of the ITER Magnetic Diagnostic Integrators

ADDITIONAL EXPERIENCE

2020 Development of didactic material for the Portuguese tele-school program **Estudo em casa**

2018 Training program **Tokamak Engineering and Operation**, IPFN Lisbon, Portugal

2018 MOOC Tecnico online course **Simulation and Control of Drones**

2016 Jury Prize at the 2016 Lichtwoche München student competition with the project **GLOW - Geographical Lighting Of Wikipedia**

2016 Monitor at the Athens Programme course **e-lab - Remotely controlled physics laboratories**

2016 Arduino Instructor at the **ESERO Portugal** workshop Plantas em Marte? *(Plants on Mars?)*

2015 Participation in the **Hands on Particles and Light Workshop**, Faculty of Sciences of the University of Lisbon

TECHNICAL SKILLS

GENERAL: Data analysis, Digital Signal Processing (DSP), Electronics, FPGA programming, Experiment design and automation, Arduino/microcontrollers, Scientific writing, Thermonuclear fusion

SOFTWARE: Python, C/C++, SQL, Matlab, Bash, PHP, Verilog, MS Office, Linux, Git, LaTeX

LANGUAGE: Portuguese: Native; English: C2; Spanish: B2; French: B1; Polish A2; Czech A2

CONFERENCE CONTRIBUTIONS

2024 Invited speaker at the **30th Symposium on Plasma Physics and Technology** (SPPT), Prague, Czech Republic

2022 Oral contribution at the **10th International Workshop and Summer School on Plasma Physics** (IWSSPP), Kiten, Bulgaria

2022 Poster at the **32st Symposium on Fusion Technology** (SOFT), Dubrovnik, Croatia

2020 Poster at the **31st Symposium on Fusion Technology** (SOFT) Virtual Edition, Online

2019 Two posters at the **3rd European Conference on Plasma Diagnostics** (ECPD) Lisbon, Portugal

SELECTED PUBLICATIONS

1. **A. Torres**, B. B. Carvalho, T. Markovic, A. J. N. Batista, A. Havranek, V. Weinzettl, H. Fernandes. "Data acquisition with real-time numerical integration for COMPASS-U magnetic diagnostics". *Fusion Engineering and Design*, 191, 113580, 2023. DOI:10.1016/j.fusengdes.2023.113580

2. V. Weinzettl, P. Bilkova, I. Duran, M. Hron, R. Panek, T. Markovic, M. Varavin, J. Cavalier, K. Kovarik, **A. Torres**, et al. "Development of the diagnostic tools for the COMPASS-U tokamak and plans for the first plasma". *Fusion Engineering and Design*, 191, 113545, 2023. DOI:10.1016/j.fusengdes.2023.113545

3. J. Oliveira, **A. Torres**, A. J. N. Batista, J. Sousa, B. Carvalho, A. Havranek, H. Fernandes. "Digitizer hardware for magnetic data acquisition on COMPASS-U". *EPJ Web Conf.* 288 03005, 2023 DOI: 10.1051/epjconf/202328803005

4. **A. Torres**, K. Kovarik, T. Markovic, J. Adamek, I. Duran, R. Ellis, M. Jerab, et al. "Test bench for calibration of magnetic field sensor prototypes for COMPASS-U tokamak". *Fusion Engineering and Design* 168, 112467, 2021. DOI: 10.1016/j.fusengdes.2021.112467

5. D Corona, **A. Torres**, E. Aymerich, A. Cianciulli, A. De Falco, B.B. Carvalho, et al. "Extraction of the plasma current contribution from the numerically integrated magnetic signals in ISTTOK". *Journal of Instrumentation* 15 (02), C02020, 2020. DOI:10.1088/1748-0221/15/02/C02020

6. **A. Torres**, K. Kovarik, T. Markovic, J. Adamek, V. Weinzettl, B.B. Carvalho, et al. "Mineral insulated cable assessment for inductive magnetic diagnostic sensors of a hot-wall tokamak". *Journal of Instrumentation* 14 (09), C09043, 2019. DOI:10.1088/1748-0221/14/09/C09043

7. **A. Torres**, B.B. Carvalho, D. Corona, H. Figueiredo, H. Alves, H. Fernandes. "ISTTOK poloidal field coils positioning assessment". *Journal of Instrumentation* 14 (08), C08001, 2019. DOI: 10.1088/1748-0221/14/08/C08001

8. **A. Torres**, D. Gonçalves, E. Ricardo, R. G. Ferreira, R. Calado, R. Torres, H. Fernandes, V. Guerra. "Collaborative development of plasma physics MOOC in the context of a PhD curricular unit". *5th Experiment International Conference (exp. at'19)*, 123-127 2, 2019. DOI:10.1109/EXPAT.2019.8876481

9. **A. Torres**, M. Santos, S. Balula, J. Fortunato, H. Fernandes. "Turning the internet of (my) things into a remote controlled laboratory" *13th International Conference on Remote Engineering and Virtual Instrumentation (REV)*, 371-373, 2016. DOI:10.1109/REV.2016.7444505

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