Lidia Piron

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Short narrative of main achievements

I am Lidia Piron, assistant professor of Experimental Physics at the Physics and Astronomy Department of the University of Padova, Italy (RTDB contract).

I am a researcher on plasma physics and on nuclear fusion science in magnetic confinement devices. My expertise is focused on Magneto-Hydro-Dynamic (MHD) plasma stability and on the control of instabilities and of spurious magnetic fields, named error fields, in magnetic fusion experiments. I have worked in this field since the beginning of my carrier, carrying out studies in the reversed-field pinch device RFX-mod, Padova, Italy, and in the DIII-D tokamak, General Atomics, California, USA. The results obtained in my research allowed me to win the *2013 European Plasma Physics Society* prize for the best PhD thesis in plasma physics and the *11st EFDA fusion researcher fellowship*.

From 2014 to 2018, I worked as a permanent staff scientist of *United Kingdom Atomic Energy Authority, CCFE, United Kingdom*. In this international environment, I have played a major role in the physics design of MAST-U, which is the upgrade of the MAST tokamak experiment. For this project, I have worked on the identification of error fields and the development of techniques for error field minimization. In this position, I have also covered roles of coordination for various real-time machine protection systems for JET and MAST-U tokamak devices, such as the JET vessel-temperature map and error field correction coil systems and the MAST-U magnetics system.

Thanks to my expertise, I am involved in various international projects, supported by *EUROfusion* (the Consortium, which coordinates fusion research in Europe) and by the *International Tokamak Physics Activity (ITPA,* the science initiative in support to ITER*),* dedicated in solving open issues towards the realization of magnetic fusion. I have presented my research attending 18 international conferences, I have given 4 invited talks and I am author and co-author of 113 papers in international journals.

Over the years, I have acquired competence on international team management. I was appointed as scientific coordinator of three experiments supported by HORIZON2020 fusion road map, coordinating about 50 international researchers. The objective of these experiments is the development of real-time controllers for improving plasma performance in several international tokamaks, such as AUG, located *at IPP, Germany*, JET and MAST-U, at *CCFE United Kingdom*. In this context, it is worth mentioning my participation to JET, the largest tokamak in the world and the only one presently able to operate in the deuterium and tritium fuel mixture. Especially for this plasma operation, I have designed an innovative tool, which will be exploited for the optimization of consumption of tritium and neutron budgets during deuterium-tritium operations in JET. During JET experimental campaign, I am also responsible of the real-time control system.

My expertise on MHD instabilities and error field control is established and recognized in the fusion community with my active participation to international group meetings, conference attendance and scientific production. The quality of my research and my expertise allowed me to be selected as a member of the *MHD ITPA* working group and to be part of the scientific committee of *47th European Physical Society conference*.