

Carlo Poggi

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Research experience

November 2017 - Present, PhD candidate in Fusion Science and Engineering

Università degli studi di Padova (Italy) and Ghent University (Belgium)

Project title: *Numerical and experimental study of the physics of negative ion beams*

I am currently working with the Neutral Beam Injector group of Consorzio RFX, focusing on diagnostic development and beam extraction modeling for SPIDER and NIO1, the two negative ion sources in operation at Consorzio RFX. My main activities include:

- data analysis and beam simulations for the experimental campaigns;
- development of an Allison emittance scanner for SPIDER;
- development of plasma diagnostics (Langmuir probes and RFA) to study source plasmas and beam-gas interactions;
- design and construction of the compact RF ion source CRISP;
- development of a test-particle Monte Carlo code for the study of ion trajectories in SPIDER.

September - October 2019, RFX-NIFS joint campaign at NIFS

National Institute for Fusion Science, Toki (Japan)

Characterization of NIFS arc ion source by means of retarding field analyzer diagnostics.

July 2019, RFX-IPP joint campaign at IPP

Max Planck Institute für Plasmaphysik, Garching (Germany)

Investigation of BATMAN-Upgrade beamlet properties using thermography and beam emission spectroscopy.

Publications

- C. Poggi et al. "Design and development of an Allison type emittance scanner for the SPIDER ion source", *Rev. Sci. Instrum.* 91, 013328 (2020), DOI: 10.1063/1.5129650. Oral contribution at ICIS19 in Lanzhou (China).
- C. Poggi et al. "CRISP: A compact RF ion source prototype for emittance scanner testing", *Rev. Sci. Instrum.* 91, 033314 (2020), DOI: 10.1063/1.5129641
- R. S. Delogu, C. Poggi et al. "Analysis of diagnostic calorimeter data by the transfer function technique", *Rev. Sci. Instrum.* 87, 02B932 (2016), DOI: 10.1063/1.4936081
- C. Wimmer, et al., including C. Poggi "Beamlet scraping and its influence on the beam divergence at the BATMAN Upgrade test facility ", *Rev. Sci. Instrum.* 91, 013509 (2020), DOI: 10.1063/1.5129336
- M. Cavenago, et al., including C. Poggi "Beam and installation improvements of the NIO1 ion source", *Rev. Sci. Instrum.* 91, 013316 (2020), DOI: 10.1063/1.5128658
- G. Serianni, V. Toigo, et al., including C. Poggi "First operation in SPIDER and the path to complete MITICA ", *Rev. Sci. Instrum.* 91, 023510 (2020), DOI: 10.1063/1.5133076
- V. Antoni et al., including C. Poggi "Negative ion beam source as a complex system: identification of main processes and key interdependence", *Rend. Fis. Acc. Lin.* (2019) 30:277, DOI: 10.1007/s12210-019-00798-5
- M. Cavenago, G. Serianni et al., including C. Poggi "Experimental experience and improvement of NIO1 H- ion source", *Fus. Eng. Des.* 146A (2019) 749752, DOI: 10.1016/j.fusengdes.2019.01.071
- G. Serianni, V. Toigo, et al., including C. Poggi "SPIDER in the roadmap of the ITER neutral beams", *Fus. Eng. Des.* 146B (2019) 2539-2546, DOI: 10.1016/j.fusengdes.2019.04.036