MARGHERITA UGOLETTI

PhD Student in Fusion Science and Engineering

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RESEARCH AREA

I am a PhD student of the University of Padua. Since my master degree thesis, as well as in my PhD, I am working on beam characterization using visible tomography, both on NIO1 (a small size negative ion source) and SPIDER.
I am able to manage several diagnostics both for the study of the negative ions beam and of the plasma source properties, exploiting different techiques: electrostatic probes and spectroscopy for the characterization of the plasma in the source and visible tomography, beam emission spectroscopy and calorimetric measurements to characterize the beam.
Beside the experimental activities, I am working on the development of an inversion algorithm to reconstruct the 2D beam emission pattern. I also worked on a PIC code simulating the development of the beam when it propagates through the background gas.

EDUCATION

Joint Doctorate in Fusion Science and Engineering

University of Padua - Ghent University

Oct 2018 – Oct 2021 Consorzio RFX CNR, Padova, Italy

Post-graduate training internship

University of Bologna

May 2018 – Sept 2018 Consorzio RFX CNR, Padova, Italy

Master's Degree in Physics - Curriculum Nuclear and Subnuclear Physics

University of Bologna **Rank: 110/110 with honors**

Sept 2015 – June 2017 Bologna, Italy

Bachelor's Degree in Physics

University of Bologna **Rank: 104/110**

Sept 2012 – June 2015 Bologna, Italy

PUBLICATIONS

- *First results of SPIDER beam characterization through the visible tomography*, M. Ugoletti et al., Submitted 31st Conference SOFT 2020.
- *Beamlet scraping and its influence on the beam divergence at the BATMAN Upgrade test facility*, C. Wimmer et al., Rev. Sci. Instrum. 91, 013509 (2020).
- *First measurements of optical emission spectroscopy on SPIDER negative ion source*, B. Zaniol et al., Rev. Sci. Instrum. 91, 013509 (2020).
- *Beam and installation improvements of the NIO1 ion source*, M. Cavenago, et al., Rev. Sci. Instrum. 91, 013316 (2020).
- *First operation in SPIDER and the path to complete MITICA*, G. Serianni, et al., Rev. Sci. Instrum. 91, 023510 (2020).
- *Experimental experience and improvement of NIO1 H^- ion source*, M.Cavenago et al., Fus. Eng. and Design, Volume 146, Part A, September 2019, Pages 749-752.
- *Negative ion beam source as a complex system: identification of main processes and key interdependence*, V. Antoni et al., Rend. Fis. Acc. Lincei (2019) 30: 277.
- *Tomographic reconstruction of the visible emission of NIO1 negative ion beam*, M.Ugoletti et al., 46th EPS Conference on Plasma Physics.
- *SPIDER in the roadmap of the ITER neutral beams*, G.Serianni et al., Fus. Eng. and Design, 17 April 2019.

CONFERENCES

- *31st SOFT (2020).*
  First results of SPIDER beam characterization through the visible tomography.
- *46th EPS Conference on Plasma Physics (2019)*
  Tomographic reconstruction of the visible emission of NIO1 negative ion beam.