



Contribution ID: 74

Type: **Poster presentation**

## Beam Characterization by Means of Emission Spectroscopy in the NIO1 Experiment

*Wednesday 18 October 2017 18:45 (15 minutes)*

The NIO1 (Negative Ion Optimization 1) experiment hosts a flexible RF  $H^-$  ion source, developed by Consorzio RFX and INFN-LNL to improve the present concepts for the production and acceleration of negative ions. The source is also used to benchmark the instrumentation dedicated to the ITER neutral beam test facility. Many diagnostics are installed in NIO1 to characterize the source and the extracted negative ion beam. Among them, Beam Emission Spectroscopy (BES) has been installed in NIO1 to measure the divergence and the uniformity of the beam, together with the fraction of beam ions which was neutralized inside the acceleration system. The diagnostic method is based on the analysis of the Doppler shifted  $H_\alpha$  photons emitted by the fast beam particles and collected along lines of sight. The article will present the experimental setup and the analysis algorithms of the BES diagnostic, together with a discussion of the first measurements and of their correlation with the operational parameters.

**Author:** BARBISAN, Marco (Consorzio RFX)

**Co-authors:** ZANIOL, Barbara (Consorzio RFX); CAVENAGO, Marco (INFN-LNL); SERIANNI, Gianluigi (Consorzio RFX); PASQUALOTTO, Roberto (Consorzio RFX)

**Presenter:** BARBISAN, Marco (Consorzio RFX)

**Session Classification:** Poster Session 3

**Track Classification:** Beam extraction, transport, and diagnostics