Contribution ID: **19** Type: **Poster**

Direct current measurements of the SPIDER beam: a comparison to existing beam diagnostics

Tuesday, 4 October 2022 18:30 (5 minutes)

For negative ion beam sources there are several methods of measuring the accelerated beam current, namely electrical measurements at the power supply and calorimetric measurements. On SPIDER, the ITER Heating Neutral Beam full-scale beam source, electrical measurements at the acceleration grid power supply (AGPS) are complemented by polarizing the diagnostic calorimeter STRIKE to provide an additional electrical measurement of the accelerated current. This is in addition to the calorimetric measurements provided by STRIKE. These diagnostics give differing measurements of the beam current. Exploiting the reduced number of open apertures on SPIDER a new beam diagnostic has been installed to measure the individual beamlet currents directly. The so called Beamlet Current Monitor (BCM) has been used to measure the current of five beamlets during the most recent SPIDER campaign.
This work compares the BCM current to the electrical measurements at the Acceleration Grid Power Supply (AGPS) and STRIKE calorimeter. The average BCM current agrees well with the STRIKE measurements, indicating that the AGPS overestimates the beam current. The individual beamlets are compared to the STRIKE calorimetric measurements, showing similar current trends with the source parameters.

Primary author: SHEPHERD, Alastair

Co-authors: RIGONI GAROLA, Andrea (RFX); PIMAZZONI, Antonio; DUTEIL, Basile Pouradier (Consorzio RFX (CNR, ENEA, INFN, Università di Padova, Acciaierie Venete SpA)); Dr SERIANNI, Gianluigi (Consorzio RFX); PATTON, Tommaso; SARTORI, emanuele (unipd)

Presenter: SHEPHERD, Alastair

Session Classification: Poster session 1

Track Classification: 8. Beam Diagnostics