



Contribution ID: 217 Contribution code: MOPMO14

Type: Poster Presentation

## Development of a Faraday Cup for the FETS-FFA

*Monday 8 September 2025 16:00 (2 hours)*

The proposed FETS-FFA would exhibit high-intensity operation of a Fixed-Field Alternating Gradient (FFA) accelerator, as a demonstrator for a spallation neutron source driver. Faraday cups are planned to be installed in the injection straight to investigate injection efficiency and infer beam-position during early commissioning stages; and in the extraction line to inspect extraction efficiency. The chosen Faraday cup design must be suitable for the 3-12 MeV proton energy range, the average beam power of the FETS Linac and the FETS-FFA's extracted beam.

Thermal aspects of this design will be introduced, including cooling water flow-rate calculations and an approximate method of simulating this flow with equivalent convective cooling. The 3D tracking for a secondary electron suppressor will also be presented, as well as calculations to estimate the required suppression voltage.

### Footnotes

### Funding Agency

### I have read and accept the Conference Policies

Yes

**Author:** SAPKOTA, Sushanta (University of Portsmouth)

**Co-authors:** POSTHUMA DE BOER, David (Science and Technology Facilities Council); YAMAKAWA, Emi (Science and Technology Facilities Council)

**Presenter:** SAPKOTA, Sushanta (University of Portsmouth)

**Session Classification:** MOP

**Track Classification:** MC01: Beam Charge and Current Monitors