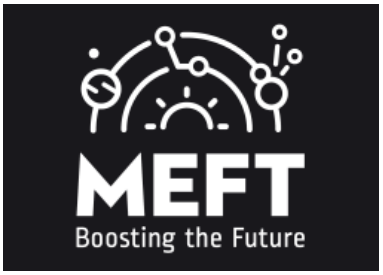

Contribution ID: **14** Type: **Workshop 2025/2026**

Automated positioning and calibration procedures for improved imaging performance of a novel small animal in-beam PET scanner

Wednesday 28 January 2026 17:30 (15 minutes)

Proton therapy offers superior dose conformity compared to conventional radiotherapy but the full clinical exploitation of its potential healthy-tissue sparing benefits remains limited by uncertainties in beam range within the patient. Positron Emission Tomography (PET)–based verification provides a promising in vivo method to monitor proton range by imaging irradiation-induced β^+ activity. This thesis aims to enhance the flexibility and autonomous operation of the SIRMIO in-beam small-animal PET scanner by equipping it with high-precision motorized stages and a TANGO-based control system, enabling its integration into diverse irradiation setups. In parallel, novel calibration and sensitivity characterization strategies will be developed, to allow for smaller acquisition times of these procedures. Synthetic phantom-based denoising approaches will also be developed to improve quantitative accuracy under low-count conditions.

Field of Research/Work

Nuclear Physics

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