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Extraction and Low Energy Beam Transport Models Used for the IFMIF/EVEDA RFQ Commissioning

The Linear IFMIF Prototype Accelerator (LIPAc) is a high intensity D⁺ linear accelerator; demonstrator of the International Fusion Material Irradiation Facility (IFMIF). In summer 2019 the IFMIF/EVEDA Radio Frequency Quadrupole (RFQ) accelerated its nominal 125 mA deuteron (D⁺) beam current up to 5 MeV, with 90% transmission for pulses of 1 ms at 1 Hz. This success was possible thanks to an intense previous campaign of modelization and measurements in order to characterize the RFQ input beam, which is affected by the ECR ion source extraction and the low energy beam transport. The simulation models used with the measurement benchmarks are here presented.

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