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First results of the high-current, high-stability 3.5 MeV Singletron™ for LUNA-MV

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HVE has designed and built a dedicated 3.5 MV linear single-ended DC accelerator (Singletron) to satisfy the stringent demands of the LUNA MV project at LNGS (L'Aquila, Italy), in which nucleosynthesis is studied in the final Helium and Carbon burning stages that lead to the generation of heavy elements.
The beam current capability of the system include e.g. 1000 μA H+, 500 μA 4He+ (both 500 keV - 3.5 MeV) and 100 μA 12C2+ (1.0 - 7.0 MeV). Beam energy stability and ripple are in the order of 1.10-5 and energy reproducibility is ~1.10-4.
The system is equipped with a 10 GHz, all permanent magnet ECR ion source for high current at higher charge states and to have long servicing interval, specified at 700 hrs (at max intensity) , but anticipated to be much longer.
In this contribution will introduce the system with its design details and will show the first results obtained.

Summary

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