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Commissioning results for the new electron gun for REXEBIS

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The electron gun of the REXEBIS charge breeder at the REX/HIE-ISOLDE post accelerator has been upgraded from a standard magneto-immersed type to a gun using a non-adiabatic magnetic element. The results from the commissioning of the new design are here presented, emphasizing aspects of interest for the users of the radioactive beams. In particular, the charge breeding efficiency have been studied, and optimal breeding times for a broad range of elements and charge states are given for different electron currents. In addition, complete mass-scans of the extracted beam have been performed from which the level of cathode-originating contaminations could be established. We also briefly discuss the cathode reliability and a possible mitigation strategy for the limited electron emission that was encountered with the new IrCe-type cathode.

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