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Beam focusing and ion-current measurements of Ga⁺ from a Liquid Metal Ion Source (LMIS)

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An assembly for a commercial Ga⁺ liquid metal ion source (LMIS) in combination with an ion transportation and focusing system, a pulse high-voltage quadrupole deflector and a beam diagnostics system has been constructed in the framework of the iThemba Labs (Cape Town, South Africa) –JINR (Dubna, Russia) collaboration [1]. Various electrode geometries for Ga⁺ ion beam ignition from the LMIS will be compared. Results showing ion transport efficiency and beam profiles for the existing setup will be presented. Optimal settings will be highlighted for the purpose of using this transport system for singly charged ion injection into the Krion 6-T Electron String Ion Source (ESIS) charge-breeder at JINR.

[1] M. J. Segal, R. A. Bark, R. Thomae, E. E. Donets, E. D. Donets, A. Boytsov, D. Ponkin, and A. Ramsdorf, Liquid metal ion source assembly for external ion injection into an electron string ion source (ESIS), Rev. Sci. Instrum. 87, 02A913 (2016).

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