Contribution ID: **147**   Type: **Poster**

Numerical Validation of a New Extraction System for the ECR Source LEGIS at INFN-Legnaro National Laboratories

Thursday, 11 September 2025 11:15 (1h 45m)

The extraction system of the Electron Cyclotron Resonance Ion Source LEGIS (LEGnaro ecrIS), installed at INFN - Legnaro National Laboratories, and the following Low Energy Beamline (LEBT) have been recently characterized by numerical simulations, whose results showed a very good agreement with experimental evidences. The study correctly reproduced the beam transmission downstream the ion source, as well as some criticalities emerged during the beam transport for the scheduled nuclear physics experiments. Even if the beam properties (quality and intensity) are still suitable for the injection into the PIAVE-ALPI accelerator complex, their optimization would be desirable in view of the upcoming production and extraction of U beams, whose intensity in the desired mass-over-charge ratio could be lower than usual. This contribution describes a possible optimization, validated by numerical simulations, of the extraction system of the LEGIS source. The results revealed an improved extracted beam quality, thus foreseeing a higher transmission and an easier setting of the downstream LEBT. Starting from the conceptual design used in the numerical simulations, a possible mechanical implementation in the beamline has been studied and will be also presented.

Primary author: GALLO, Carmelo Sebastiano (INFN - LNL)

Co-authors: MASCALI, Giada Rachele (INFN Legnaro National Laboratories - Sapienza University of Rome); GALATÀ, Alessio (INFN-Legnaro National Laboratories); Dr KALVAS, Taneli (Accelerator Laboratory, Department of Physics, University of Jyvaskyla (JYFL)); Mr MIGLIORANZA, Marco (INFN-Legnaro National Laboratories); Dr ROSSIGNOLI, Massimo (INFN-Legnaro National Laboratories); Mr FRANCESCON, Paolo (INFN-Legnaro National Laboratories); Mr GIRALDO, Francesco (INFN-Legnaro National Laboratories); MARTINI, Denis (INFN-LNL div. Acceleratori); Mr CARLETTO, Osvaldo (INFN-Legnaro National Laboratories)

Presenter: GALLO, Carmelo Sebastiano (INFN - LNL)

Session Classification: Poster Session

Track Classification: Beam formation, extraction, and transport