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ASTERICS, a New 28 GHz Electron Cyclotron Resonance Ion Source for the SPIRAL2 Accelerator

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A new $A/Q=7$ injector is under development for the SPIRAL2 accelerator at Caen, France (NEWGAINproject). A new 28 GHz superconducting electron cyclotron resonance ion source (ECRIS) named ASTERICS*, located on a high voltage platform, is under design for this project. The source features a modern cryostat allowing for the saving of helium during a quench and a large plasma chamber (90 mm radius and 600 mm length). The physical and technical motivations for a larger plasma volume are detailed and estimates of expected beam intensities enhancement discussed. The source will mainly produce metallic ion beams: the concept of a temperature-controlled liner (up to $\sim 1000^\circ\text{C}$) will be presented. The design of the ion source and the high voltage platform, with a focus on the ECRIS superconducting magnet [1] will be detailed.

- NEWGAIN is the acronym for NEW GAnil Injector. Project funded by Agence Nationale de la Recherche.

** ASTERICS is the acronym for Advanced Spiral Two Electron cyclotron Resonance Ion source at Caen with Superconducting magnets

[1] D. Simon et al., "Design of ASTERICS: A Superconducting 28 GHz ECR Ion Source Magnet for GANIL," in IEEE Transactions on Applied Superconductivity, vol. 33, no. 5, pp. 1-5, Aug. 2023, Art no. 4002905, doi: 10.1109/TASC.2023.3260779.

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Yes

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