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## Status report on 60 GHz ECRIS activity

*Monday, September 16, 2024 5:00 PM (1h 30m)*

SEISM (Sixty gigahertz Ion Source using Megawatt magnets) is an electron cyclotron resonance ion source operating at the frequency of 60 GHz using a gyrotron producing high intensity HF pulse (up to 1 ms/300 kW/2 Hz). The prototype is based on an axial cusp magnetic geometry using polyhelix coils (installed at the LNCMI facility in Grenoble) generating a closed ECR surface at 2.1 T.

Since 2019 and the restart of the project, several experimental campaigns were carried out using oxygen support gas. Beam production was studied using the setting of the source aiming to reproduce the ion current densities of 1 A/cm<sup>2</sup> previously measured. Set up and recent experimental results, will be presented.

Furthermore, in the frame of the PACIFICS project (funded by French National Research Agency under the Equipex Program), a new 60 GHz ion source will be built, where polyhelix will be replaced by superconducting coils and the source will be installed at LPSC for easier availability. A new extraction system will be built in order to transform the observed high current density into a target ion beam intensity of ~100 mA.

This paper will present a preliminary study of the new extraction system, built upon the principles developed by Vybin\*. The system's design and optimization is carried out using COMSOL Multiphysics and IBSIMU simulation tools, ensuring precise modeling of electric field fields and ion trajectories.

### Footnotes

- S S Vybin et al 2020 Plasma Sources Sci. Technol. 29 11LT02

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

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