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ECR2 performance upgrades at ATLAS

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The user requests for higher beam energies and intensities have driven the decision to upgrade the ECR2 ion source at the Argonne Tandem Linac Accelerator System. Multiple upgrades are in progress with the expected outcome of dramatically increased ECR2 beam intensities and charge state capabilities. The magnetic upgrades include integrating an improved hexapole permanent magnet array* that provides the ion source radial fields, reworking the magnetic materials surrounding the plasma chamber, and installing a new cooling system for the electromagnetic solenoids that govern the ion source axial fields. The new hexapole and higher solenoid magnet operating currents will increase the ion source magnetic fields and support the use of 18 GHz RF heating, further increasing the ECR2 beam capabilities. Following these improvements and subsequent source performance, simulations of beam transport devices on the ion source platform will need to be revisited for transmission of high intensity beams. Details of these upgrade projects and simulations of the ion optics are presented.

Footnotes

[*] Vondrasek R, McLain J, Scott R 2024 J. Phys.: Conf. Ser. 2743 012044

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