

THE ORNL HELICON H⁻ ION SOURCE

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Abstract

Plasmas produced by helicon wave excitation typically develop higher densities, particularly near the radial plasma core, at lower operating pressures and RF powers than plasmas produced using traditional inductive RF coupling methods. Approximately two years ago we received funding to develop an H⁻ ion source based on helicon wave coupling. Our approach was to combine an existing high-density, hydrogen helicon plasma generator developed at ORNL for the Variable Specific Impulse Magnetoplasma Rocket (VASIMR) project with the SNS external antenna H⁻ source. To date we have achieved plasma densities $>10^{13}$ e/cm³ inside the ion source using <10 kW of RF power and <5 SCCM of H₂ gas flow. This report discusses the first cesiated H⁻ beam current extraction measurements from the source.

**CONTRIBUTION NOT
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