

Abstract Submitted
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Development of a 25 keV Ion Beam Source for Fast-Ion Studies on the Large Plasma Device¹ S.K.P. TRIPATHI, P. PRIBYL, W. GEKELMAN, Z. LUCKY, Department of Physics and Astronomy, UCLA — A helium ion beam source (25 kV, 3 A) has been constructed for studying the fast-ion physics on the large plasma device (LAPD). The source has been designed to match the ion beam speed with the Alfvén speed in the LAPD plasma. The ion beam will be injected at a variety of pitch angles into the LAPD. The ion-beam source has an inductive RF source to produce $\approx 10^{19} \text{ m}^{-3}$ helium plasma in a ceramic dome (volume: $\approx 0.04 \text{ m}^3$). The beam is accelerated using a rectangular (8 cm x 8 cm), multi-aperture, three-grid system. A pulsed DC power supply (25 kV, 4 A) has been developed to deliver the acceleration voltage to the grids during the time interval (0.1 – 2.0 ms, rep rate: 1 Hz) of the beam injection. A EUV grazing incidence monochromator (for the Doppler-shift measurements) and Langmuir probes are main diagnostic tools. The source is presently being conditioned in a test facility. We plan to present the initial results on the characterization of the ion-beam and its interaction with the LAPD plasma.

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Shreekrishna Tripathi
Department of Physics and Astronomy, UCLA

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