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Excitation of Electron Acoustic Waves in Plasmas of the SINP-MaPLE Device.[1] SATYAJIT CHOWDHURY, Saha Institute of Nuclear Physics, SUBIR BISWAS, weizmann institute of Science, NIKHIL CHAKRABRATI, RABINDRANATH PAL, Saha Institute of Nuclear Physics — Electron acoustic wave (EAW) is the low frequency branch of the undamped electrostatic plasma wave and has low phase velocity [Physics of Fluids, 28, 2439-2441 (1985)]. In order to overcome Landau damping the EAW needs a non-Maxwellian electron velocity distribution with a flat region near the phase velocity, or equivalently, a plasma with two temperature electron species with a relative velocity between them. The ECR produced plasmas of the MaPLE device [Review of scientific instruments, 81(7), 073507, (2010)] at Saha Institute of Nuclear Physics provide such characteristics as observed by retarded field energy analyzer and single Langmuir probe. Experiments are carried out to exploit this feature by putting a negatively biased mesh launcher inside the plasma and energizing it with sinusoidal voltages from a function generator with frequencies varying near the ion plasma frequency. Circular mesh probes along the axis of the device serve as detectors for wave propagation. Experimental results show EAWs are indeed launched and propagate along the magnetic field direction. The dispersion curve experimentally obtained shows the phase velocity matching satisfactorily with the estimated theoretical values. Changing the bias on the launcher the electron distribution function is varied, which, in turn, controls the wave amplitude. Detailed experimental results will be presented.

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