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Flowing Magnetized Plasma experiment[1] ZHEHUI WANG, Los Alamos National Laboratory, JIAHE SI, Rensselaer Polytechnic Institute — Results from the Flowing Magnetized Plasma experiment at Los Alamos are summarized. Plasmas are produced using a modified coaxial plasma gun with a center electrode extending into a cylindrical vacuum tank with 0.75 m in radius and 4.5 m long. The basic diagnostics are Bdot probes for edge and internal magnetic field, Mach probes and Doppler spectroscopy for plasma flow in the axial and azimuthal directions, and Langmuir probes for plasma floating potential, electron density and temperature. We have found two different plasma flow patterns associated with distinct IV characteristics of the coaxial plasma gun, indicating axial flow is strongly correlated with the plasma ejection from the plasma gun. Global electromagnetic oscillations at frequencies below ion cyclotron frequency are observed, indicating that familiar waves at these frequencies, e.g. Alfven wave or drift wave, are strongly modified by the finite plasma beta. We eliminate the possibility of ion sound waves since the ion and electron temperatures are comparable, and therefore, ion sound waves are strongly Landau damped.

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Zhehui Wang
Los Alamos National Laboratory

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