Abstract Submitted
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Recent Experiments on the Gas Dynamic Trap Device[1] VADIM PRIKHODKO, Budker Institute of Nuclear Physics, Novosibirsk, Russia, GDT TEAM — The Gas Dynamic Trap (GDT) is an axially symmetric mirror device. The solenoid has a mid-plane magnetic field of 0.3 T and a mirror ratio 25-30. Two ion components are confined in the GDT with electron temperature up to 250 eV.. The first ion component is the warm collisional plasma confined in the gas-dynamic collisional regime. The second component is fast ions produced by 20 keV neutral beam injection with an anisotropic distribution in velocity space. The fast ion density peaks near their turning points. The ratio between plasma pressure and the vacuum magnetic field pressure reaches 0.55 at these regions. One of the key issues of linear machines is longitudinal losses. Suppression of thermal conductivity along the magnetic field-lines to the end walls was demonstrated in GDT. Experiments with one ambipolar end-plug were carried out. Longitudinal losses decreased 5-fold with an ion density in the end-plug only 1.5 times higher than in central cell. Another key issue is MHD-stability. Convective losses were suppressed by the "vortex confinement" method. Shear flow produced by applying a voltage to the plasma edge lead to the nonlinear dissipative saturation of flute-type oscillations

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