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Linear analysis of Magneto-Rotational Instability and other instabilities in a plasma Couette Flow JIAHE SI, ZHEHUI WANG, HUI LI, Los Alamos National Lab — The ideal magnetohydrodynamics stability of a plasma Couette flow in which the density, pressure, magnetic field are non-uniform along radial direction, is studied. For simplicity, only axisymmetric perturbations are considered. Four destabilization mechanisms are present and studied by local analysis: Kelvin-Helmholtz instability, Schwarzschild instability, magnetorotational instability and Parker instability. It is shown different instability modes prodominate depending on the equilibrium parameters. With a weak magnetic field, high temperature and moderate velocity shear, MRI is predominate over other instabilities.

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