

Abstract Submitted
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Relaxation of non-Maxwellian moments: analytical solutions of the kinetic equation for uniform plasmas¹ JEONG-YOUNG JI, E.D. HELD, Utah State University — The kinetic equation for a single-component plasma in a magnetic field is analytically solved by the moment method. From the general moment equations,² a system of linear ordinary differential equations are built for a spatially homogenous plasma. The decomposition of tensors along and perpendicular to the magnetic field reduces the system of equations into subsystems of lower dimensions. The eigenvalues and eigenvectors of each subsystem are found, and the differential equations are solved. Solutions show that parallel moments decay monotonically, but perpendicular l -th moments decay while oscillating with the $l, l - 2, \dots$ -th harmonics of gyro-frequency. Relaxation of the anisotropic pressure tensor is compared to measurements in a pure electron plasma.³ A formalism for a uniform electron-ion plasma and multiple ion- species is also discussed.

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