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Obliquely Propagating Fast and Slow Magnetosonic Shock Waves in Non-Maxwellian Plasmas

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Obliquely propagating nonlinear fast and slow magnetosonic wave modes in a hot non-Maxwellian dissipative plasma are investigated. Modified temperatures have been derived for the non-extensive Q- and (r,q)-distributions that correspond to the physical properties of such non-Maxwellian plasmas. The reductive perturbation technique has been employed to derive the linear dispersion relation (LDR) and Kadomstev-Petvashvilli-Burgers (KPB) equation for slow and fast magnetosonic wave modes. The effects of non-extensive parameter Q, spectral indices (r,q) and kinematic viscosity ν on the LDR and nonlinear propagation of KPB shock profiles for both the slow and fast modes are investigated. We found that linear and nonlinear propagation of fast and slow modes have considerably been modified in such non-Maxwellian plasmas. The results presented here would depict a realistic picture of the propagation of linear and nonlinear fast and slow magnetosonic wave modes in non-Maxwellian plasmas.