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Buneman Instability in a Magnetized Current-Carrying Plasma with Velocity Shear[1] HAIHONG CHE, University of Colorado,Boulder,CO, MARTIN GOLDMAN, DAVID NEWMAN, University of Colorado, Boulder, CO
— Electron beams and current sheets associated with magnetic reconnection can often drive Buneman instabilities. Understanding how velocity shear in the beams driving Buneman instability affects the instability is relevant to turbulence, heating, and diffusion in magnetic reconnection. Using Mathieu-equation analysis[2] for weak cosine velocity shear together with Vlasov simulations and other methods for more general velocity profiles, we study relevant effects of shear on the kinetic Buneman instability in magnetized plasmas. In the linearly unstable phase, shear enhances the coupling between oblique waves and the sheared beam, resulting in lower growth rates and a wider range of unstable modes with common growth rates. In the nonlinear phase the modes trap electrons and form phase space holes.

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[2]M. Goldman, et al, 31^{st} EPS Conf. Plasma Phys., 1.072 ECA **28G**, (2004)

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