

Abstract Submitted  
for the APR20 Meeting of  
The American Physical Society

**Gravitational instability on propagation of MHD waves in astrophysical plasma**<sup>1</sup> ALEMAYEHU CHERKOS, Addis Ababa Univ — We determine the general dispersion relation for the propagation of magnetohydrodynamic (MHD) waves in astrophysical plasma by considering the effect of gravitational instability and viscosity with anisotropic pressure tensor and heat-conducting plasma. Basic MHD equations have been derived and linearized by the method of perturbation to develop the general form of dispersion relation equation. Our result indicates that the transverse propagation of waves in such a plasma is affected by the inclusion of heat conduction. For wave propagation, parallel to the magnetic field direction, we find that the fairhose mode is unaffected, whereas the mode corresponding to the gravitational instability is modified in astrophysical plasma with anisotropic pressure tensor being stable in the presence of viscosity and strong magnetic field at considerable wavelength.

<sup>1</sup>FIP/FECS Distinguished Student program Commetee

Alemayehu Cherkos  
Addis Ababa Univ

Date submitted: 13 Dec 2019

Electronic form version 1.4