

The Role of Diffusivity and Viscosity in Solar Plasma

B. K. Kumthekar

*Affiliation: Department of Physics, Nutan Mahavidyalaya, sailu, Dist: Parbhani-431 503
(MS) India*

Email: bkumthekar@gmail.com

Abstract

For diffusive and viscous plasma, the dispersion relation is applied for the North Polar Coronal Hole, where we assumed the angular frequency ω to be a real quantity and the wave number k as a complex quantity. For ω we have chosen three values for τ . For each value of τ , we considered three situations: (i) where $\nu = 0$, (ii) where $\eta = 0$ and (iii) where both the diffusivity and viscosity are present. For the cases (i) and (ii), we get two solutions, $+(kr + iki)$ and $-(kr + iki)$. But for the case (iii), we get two pairs of solutions, $+(kr1 + iki1)$ & $-(kr1 + iki1)$ and $+(kr2 + iki2)$ & $-(kr2 + iki2)$. These two pairs correspond to the fast-mode and slow-mode waves.