

Topic: What controls how deeply the magnetic field can penetrate?

Speaker: Ms Pranjali S Padhye (RS - IV)

Abstract

Mars presents a unique plasma environment where the solar wind interacts directly with its ionosphere and localised crustal magnetic fields. This talk is about the physical processes governing magnetic-field penetration into the Martian ionosphere, with emphasis on the interplay between ion transport and magnetic diffusion. The role of electron-neutral and ion-neutral collisions in controlling magnetic diffusivity and ion motion will be discussed, along with the influence of ion chemistry and recombination. The relevant transport, diffusion, and chemical timescales are introduced to understand how magnetic-field perturbations evolve. The talk provides a physical framework for interpreting magnetic-field variability and penetration in the Martian ionosphere.