

Plasma in Space, Planetary, and Atmospheric Sciences

It is generally agreed that over 99% of the known matter in our universe is in a plasma state. Behind the word plasma, we find a wide variety of states and behaviors of matter. Planetary plasma in our ionosphere differs from interstellar plasma, such as the solar wind, just as lightning on Earth only shares partial features with electrical discharges on other planets. But all are plasma in nature, yet they require different approaches to be understood. In this presentation, we focus on the theory behind two cases: (1) collisional plasma in the Martian atmosphere and (2) (exo-) planet-induced stellar activity. Through these examples, we will show how the properties of the plasma call for particular assumptions, which help choosing the right model for the job: multifluid MHD, hybrid, fractal, chemical, etc. Here, we focus on upper atmospheric and interplanetary plasma but will open the discussion to atmospheric electricity (lightning, jet, and sprite discharges) and dielectric breakdown in other environments.



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Thursday February 16, 2017
4:00-5:00 PM
OPS, Room 140

Light refreshments will be served