

Infrared aurora in the Solar System

T. Stallard

University College London

In this introductory talk, I will discuss infrared observations of the aurorae of three Gas Giants, Jupiter, Saturn and Uranus. These observations have largely focused on using the molecule H_3^+ , as the molecule emits at a wavelength where the lower atmosphere is dark, producing clear auroral displays. Measurements of this molecule have resulted in both images and spectra, the later providing information about both temperature and dynamics in the auroral region. Not only does this provide us with detailed information about the ionosphere in which the aurora is produced, but it also allows the infrared aurora to be used as a guide to ionospheric/magnetospheric interaction, and thus helps understand the magnetospheric conditions which lead to their formation. It is particularly useful in determining the extent of Solar Wind control over the auroral formation process for each of these three planets. Using ground-based observations has also allowed a longer timespan to be covered with repeated measurements, allowing timescale variability to be measured. Finally, using infrared observations in comparison with other wavelengths provides useful insights into the formation processes involved.