Sounding the stratospheres of Uranus and Neptune with a submm wave limb sounding instrument

Paul Hartogh*[1]

[1]Max Planck Institute for Solar System Research – Germany

Abstract

The Submillimetre Wave Instrument (SWI) is part of the JUICE (JUpiter ICy moons Explorer) payload. It will provide vertical profiles of temperature and wind on a global scale by limb sounding observations. The instrument covers a wide spectral range in two far-infrared channels. It will provide information about the vertical and horizontal distribution of a number of known and maybe unknown stratospheric species and their isotopologues. The simultaneous observations with two channels allows deriving isotopic ratios of hydrogen, oxygen, carbon and sulphur. A similar instrumental concept may be feasible for the exploration of origin, dynamics and chemistry of the stratospheres of Uranus and Neptune. The development status of SWI and the potential application of the instrument and its concept for the exploration of the two ice giants will be presented.

Keywords: Far Infrared, Submillimetre Wave Instrument, Doppler wind measurements, atmospheric dynamics, atmospheric chemistry, origins

*Speaker