

## H<sub>2</sub> emissions of the upper atmosphere of Uranus

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### Abstract

We present some kinetic calculations on the upper atmosphere of Uranus based on the Trans\* family code. Recent observations made with the HST-STIS instrument allow us to compare our calculation especially in the H<sub>2</sub> emission region in the FUV.

### 1. Introduction

Recent observations of Uranus allow us to re-detect an auroral emission of Uranus during the progression of an interplanetary shock [1]. However during this campaign some low-resolution observations have been performed with the STIS spectrometer. Our aim is to use the Trans\* family code to calculate the intensity of the H<sub>2</sub> emission on Uranus.

### 2. Method

The Trans\* family code have been used to calculate the emission of a large set of planet from the Earth [2] to Jupiter [3] and exoplanets [4]. It is a kinetic transport code, which calculates the effect of primary and secondary electrons in the upper atmosphere of planets especially the ionizations, excitations and thus the spectral lines emissions. By coupling this code to the emission code developed by Menager et al. for the jovian H<sub>2</sub> emissions, we are able to calculate these emissions. The comparison with the data will be done along the STIS slit. Depending on the S/N for H<sub>2</sub> lines, we will integrate and the entire disk or isolate some particular region. We hope to be able to obtain an evaluation of the electrons spectrum that produces these H<sub>2</sub> emissions.

### 3. Summary and Conclusions

These calculations will allow to obtain constraints on the energy input in the upper atmosphere of Uranus by comparing the Trans\* simulation with the recent HST-STIS data obtained during the 2011 fall.

### References

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