

## Saturn temperature profiles at low, medium and high latitudes derived from UVIS EUV Solar occultations

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### Abstract

More than 40 stellar and solar occultation of Saturn have been obtained so far with the Ultraviolet Imaging Spectrograph (UVIS) onboard Cassini. We explore here 14 solar occultations obtained with the UVIS EUV channel, spanning low, medium and high latitudes on both hemispheres. The transmission curves in the 1046-1113 Å bandwidth are mainly sensitive to the H<sub>2</sub> absorptions and allow derivation of the stratospheric H<sub>2</sub> structure through the temperature profile. Comparisons between synthetic and observed transmissions reveal that the temperature profile is significantly different in low/medium latitudes compared to high latitude cases. The derived exospheric temperatures lie in the range 450-700 K, which is significantly higher than the previous values obtained from Voyager occultations.

The high latitude temperature profiles are compared with the constraints determined from HST-ACS, Cassini-UVIS and VIMS auroral observations and implications for auroral characteristics are discussed.

### Acknowledgements

The PRODEX program managed by the European Space Agency in collaboration with the Belgian Federal Science Policy Office (BELSPO) provided financial support for this research. J.-C.G. is supported by the Belgian Fund for Scientific Research (FNRS). This work is supported by the Cassini Project..