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Retrieval of atmospheric properties of Saturn and Titan from Cassini CIRS Spectra

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Since its arrival in the Saturnian system in July 2004, the Cassini Composite Infrared Spectrometer (CIRS) has recorded thousands of spectra of the atmospheres of both Saturn and Titan at resolutions of between 0.5 and 15.5 cm^{-1}. These spectra have been analysed with an optimal estimation correlated-*k* retrieval code, NEMESIS, to retrieve vertical profiles of temperature, composition and aerosol abundance.

We will here present prelimary results from these analysis studies. For Saturn, we have initially concentrated upon determining temperatures, para-H_2 fraction, the abundance of ammonia and phosphine, and some isotopic ratios. For Titan, preliminary retrievals of stratospheric temperature and the abundances and latitudinal variations of hydrocarbons and nitriles will be outlined.

Together with much-improved sensitivity, CIRS has a much smaller field-of-view in the mid-infrared allowing improved limb observations to be made of both worlds. Preliminary analysis of available early limb observations will also be presented if possible.