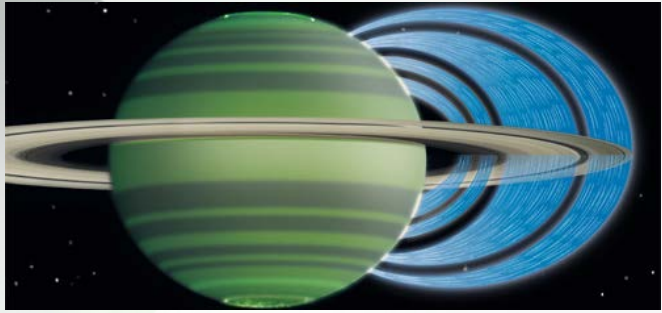


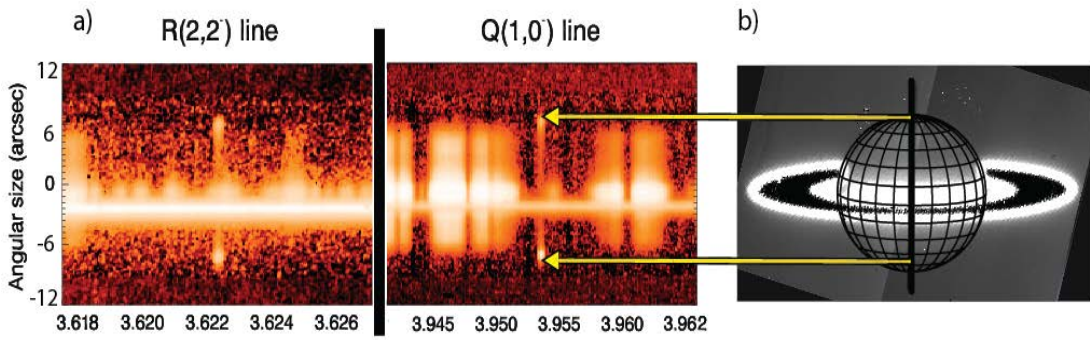
Saturn "Ring Rain"

- Charged oxygen ring particles flow along magnetic field lines and "rain" into Saturn's atmosphere, altering local chemistry.
- "Ring rain" represents a siphoning of ring material into Saturn's atmosphere; it may be responsible for the sharp boundary between the B and C rings, and it directly affects our current understanding of ring formation and evolution.



- Observations in 2011-2014 from the W. M. Keck Observatory of the ionized molecule H_3^+ in Saturn's ionosphere probe ring rain and mass loss from the rings. Variations in one hemisphere are mirrored in the opposite hemisphere.
- These are the first ever measurements of ions in Saturn's mid-latitude ionosphere by the only technique possible from the ground and are highly complementary to *Cassini*.

- Ring rain measurements significantly enhance the few remote diagnostics of Saturn's upper atmosphere.
- Measurements of the Enceladus "rain" footprint (not yet seen in infrared) would allow study of a host of magnetospheric and atmospheric phenomena resulting from this electrodynamic interaction.



O'Donoghue et al., 2013; Moore et al., 2014
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