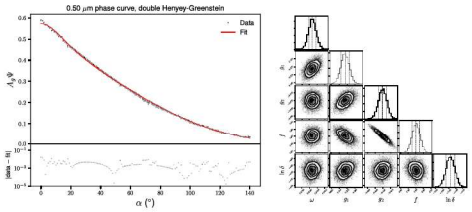
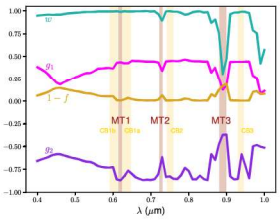


At each wavelength, extract fundamental aerosol parameters

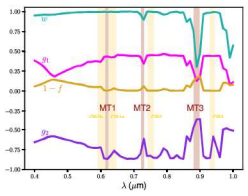
Repeat 61 times (0.4 to 1 micron)



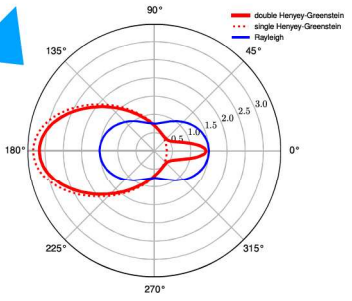
Construct aerosol properties as functions of wavelength!

Notice how reduction in scattering coincides with MT3 methane absorption band of Cassini's ISS instrument

Heng & Li (2021, ApJL, 909, L20)



Aerosol properties may be interpreted geometrically

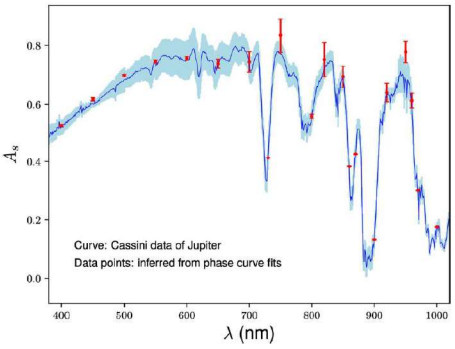


Aerosols in Jupiter's atmosphere:

1. Inconsistent with Rayleigh scattering
2. Large, possibly irregular
3. Polydisperse
4. Multiple scattering is important
5. Backscattering lobe
6. Of unknown chemical composition

Heng & Li (2021, ApJL, 909, L20)

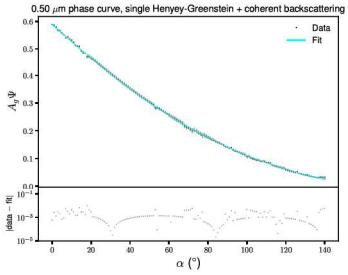
Validating our phase curve shape technique



Heng, Morris & Kitzmann (2021, Nature Astronomy, 5, 1001)

Are we witnessing coherent backscattering in the Jovian atmosphere?

Coherent backscattering: multiple scattering in non-uniform medium leading to constructive interference of light



Large body of literature exists

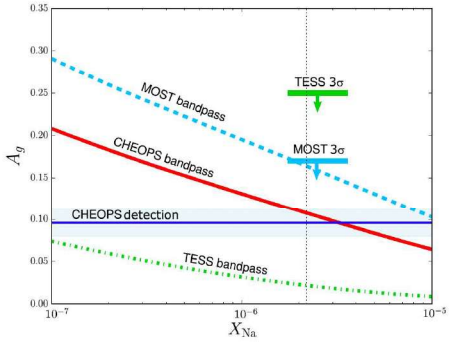
Has been cited as one of the explanations for cuspy phase curves, but this is usually for rocky bodies with surfaces and regolith

Remains to be proven for Jupiter

5-parameter fit with 2 parameters to describe coherent backscattering seems to work really well

Heng & Li (2021, ApJL, 909, L20)

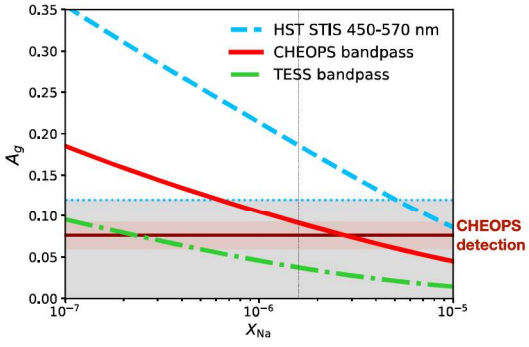
What are the dayside properties of the hot Jupiter HD 209458b? [CHEOPS data]



Measured CHEOPS geometric albedo is consistent with a cloudfree, hydrogen-dominated atmosphere consisting of water and sodium at stellar metallicity

Brandeker, Heng et al. (2022, A&A, 659, L4)

What are the dayside properties of the hot Jupiter HD 189733b? [CHEOPS data]



Measured CHEOPS geometric albedo is consistent with a cloudfree, hydrogen-dominated atmosphere consisting of water and sodium at stellar metallicity

Krenn et al. (2023, A&A, 672, A24)