Forward-scattered light in transmission measurements of (exo)planetary atmospheres

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The transmission of light through a planetary atmosphere in the solar system can be studied as a function of altitude and wavelength using stellar or solar occultations, giving often unique constraints on the atmospheric composition. For exoplanets, a transit yields a limb-integrated, wavelength-dependent transmission spectrum of an atmosphere. When scattering haze and/or cloud particles are present in the planetary atmosphere, forward-scattered light can contribute an additional signal to the transmission spectrum. We explore this effect using a 3D Monte Carlo model and show what consequences there are for the retrieved atmospheric properties when scattering is ignored, which is standard practise.