
Space observations of evaporating exoplanets

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Abstract

Soon after the first detection of an exoplanetary atmosphere in 2002, ultraviolet observations with Hubble revealed that the upper atmospheric layers of transiting hot Jupiters can be extremely extended, escaping the gravitational potential of the planets, and eventually forming hydrogen clouds occulting a large fraction of the star during planetary transits. Such atmospheric "evaporation" is surmised to impact the fate of low-mass exoplanet and to be triggered by the absorption of an intense stellar X and extreme UV irradiation in the upper atmospheres of planets. In September 2011, we started the first campaign of simultaneous UV and X space observations of transiting exoplanets, from giant planets down to super-Earths. I will present the first results of these combined observations, which hint at star-planet interaction and suggest that atmospheric evaporation is also possible for "warm" Jupiters, cooler than those previously studied, thus bridging the gap with our even cooler Solar System planets.

Keywords: Exoplanets, atmospheres, ultraviolet, X, rays

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