



## **Roche lobe effects on the atmospheric loss of Hot Jupiters**

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Observational evidence of a hydrodynamically evaporating upper atmosphere of HD209458b and recent theoretical studies on evaporation scenarios of Hot Jupiters in orbits around solar-like stars with the age of the Sun indicate that the upper atmospheres of short-periodic exoplanets experience hydrodynamically blow-off conditions resulting in loss rates in the orders of about  $1E10$  to  $1E12$  g/s. By studying the effect of the Roche lobe to the atmospheric loss of short-periodic gas giants we found contrary to previous studies, that the effect of the Roche lobe can enhance the hydrodynamically evaporation on HD209458b of about 2 and at OGLE-TR-56b at about 2.5 times. For similar exoplanets which are closer than OGLE-TR-56b the enhancement of the mass loss can even be larger. Moreover we show that the effect of the Roche lobe rises the possibility that Hot Jupiters can reach easier blow-off conditions at temperatures which are less than expected (less than 10000 K) by the stellar X-ray and EUV (XUV) heating alone.