



How does the stellar Lyman alpha flux drive the planetary Hydrogen exospheric escape?

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Planetary thermal escape, the so-called Jeans escape, occurs in the uppermost layer of the atmosphere, the exosphere. There, the medium is not collisional enough to maintain the velocity distribution function maxwellian and a part of the gas overcomes the escape velocity. However, there is another mechanism which emphasizes the thermal Hydrogen escape: the radiation pressure. The radiation pressure results from the resonant scattering of stellar photons by an atom or molecule. This phenomenon is particularly efficient on hermean Sodium but also on Hydrogen around any planet/exoplanet. In this study, we will quantify the increase of the Jeans escape induced by the radiation pressure on terrestrial planets (up to 30% at Earth) and exoplanets and show the existence of an upper limit for this escape which is none other than the blow-off regime.