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Characterising the high-energy irradiation of exoplanetary atmospheres

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Abstract

Nearly 75% of the stellar population in our galaxy is made up of low mass, making them the most common stars in our neighbourhood, in turn, the most frequent planet hosts. Due to intrinsically low luminosities of red stars, the habitable zone lies close to the host stars making the orbiting world extremely vulnerable. Recent studies have shown that high-energy emission can have a crucial influence on the evolution of planets. An important ingredient in atmospheric modelling is the strength of the surrounding high-energy radiation field, which is the major driver of planetary mass loss. Intense high-energy radiation can heat the exospheres of close-in planets to chromospheric temperatures of around 10000 K, which leads to planetary mass loss. The high-energy radiation from the host stars strongly determine the amount of gas lost from the atmospheres of close-in exoplanets. In this poster, I will present my ongoing work on a systematic and detailed characterisation of irradiation-induced exoplanetary mass-loss. I will address the consequence of high energy radiation absorbed by the upper planetary atmosphere.