

Extrasolar planets: a radiation diet



Planet erosion as an effect of X-rays ionizing irradiation from the corona of a low mass star. The mass being lost from the planet forms a sort of comet-like tail that is observed in Lyman alpha or the He line at 10830 Å. Artistic impression. Credit: NASA, ESA, and A. Feild (STScI). Bourrier et al. 2018, A&A 620, A147

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Abstract: Currently known extrasolar planets population is biased towards short-period planets. They tend to be highly irradiated. Photons in the XUV range (1-912 Å) are of special importance in this context because they ionize neutral H atoms, yielding planetary atmosphere photoevaporation, which in turn results in non-negligible planet mass loss rates. This mechanism has been proposed to explain the distribution of planets in the mass-radius diagram. The XUV stellar irradiation is not only important in the photoevaporation processes, but also in the formation of the He I 10830 Å triplet, which is also used to test the planet atmospheric losses. In this talk I will introduce a recent work in which we demonstrate how tight is the link between this triplet and the XUV stellar irradiation, aside from the photoevaporation process.

Jueves 16 de enero, 12 horas, seminario de Física Nuclear

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