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Determining the role of irradiation in radiation pressure instabilities.

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It has been known since the 70's that accretion disks are unstable above an accretion rate of ~10% Eddington. Yet, despite the several accreting systems known, only a handful of stellar mass black holes have been showing clear signs of accretion disk instabilities. Through an unprecedented multi-wavelength campaign of a highly accreting neutron star, it has been recently shown that the whole phenomenology of these systems can be explained in terms of radiation pressure instability. This opens a new avenue to solve this long standing problem by analysing the contribution of irradiation on the disk. Given this, I will present the first results on a new version of GLADIS which includes radiation from a central object. Preliminary results show that this component changes the profile of the heartbeats oscillations. Systematic analysis of this feature will allow in the future to understand the onset and the periodicity of this phenomenon for different irradiation strength.

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