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I-Process nucleosynthesis in AM CVn Systems

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It is common opinion that AM CVn systems end their life as peculiar SNe Ia events due to detonation of a massive He layer piled up via mass transfer onto the CO WD component.
However, it has been shown that, if the effects of rotation are properly taken into account in modeling the evolution of the accretor in these systems, the accreting WD experiences recurrent very strong He-flashes during which all the accreted mass as well as part of the underlying CO core is lost via Roche lobe overflow episodes.
Moreover, it has been found that during the flashes the temperature at the base of the He-rich layer largely exceeds 350 Mk, so that alpha-captures onto 22Ne become possible and a neutron flux (of the order of 10^15 cm^(-3)) typical of the I-process nucleosynthesis is delivered. The 22Ne mass fraction abundance in the He-rich layer is almost equal to the initial metallicity of the progenitor star, as it is produced via double alpha captures onto 14N, the ashes of H-burning via CNO cycle.
In this talk we discuss the nucleosynthesis produced during He-flashes by studying the future evolution of the PTF J2238+743015.1 system. We extend our analysis by investigating the dependence of the obtained results on the physical conditions in the He-burning shell and on the initial metallicity of the progenitor system. At the end we estimate the expected contribution of rotating AM CVn systems to the evolution of the interstellar medium.

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