Constraints on progenitors of Classical Novae

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We derive constraints on the nature of progenitors of Classical Novae (CNe). CNe are nuclear explosions occuring upon accumulation of certain amount of hydrogen-rich material on the surface of an accreting white dwarf in a close binary system. The accretion energy is released in the optical, ultraviolet, or X-ray wavelengths, depending on the type of the progenitor system. In magnetic systems (polars and intermediate polars) and dwarf novae in quiescence it is mainly emitted in the X-ray regime. Based on the CN rate in the bulge of M31 and its X-ray surface brightness, we show that no more than $\sim 10\%$ of CNe can be produced in magnetic cataclysmic variables, the upper limit being $\sim 3\%$ for parameters typical for CN progenitors. In dwarf novae, at least $\sim 90 - 95\%$ of the material must be accreted during outbursts, when the emission spectrum is soft, and only a small fraction in quiescent periods, characterized by rather hard spectra.