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Invited talk: Nuclear instabilities in white dwarfs

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A special class of white dwarfs violating the standard Chandrasekhar limit are right now a timely topic. These Super-Chandrasekhar objects could be understood as the progenitor of supernovae type Ia (SN Ia) and this is the main reason for their astrophysical interest. Some early studies tackled the possibility of white dwarfs surpassing the Chandrasekhar limit by means of magnetic fields. More recently modified gravity has turned out to be a new possibility that the researchers have discovered. In such a setting however, the theory becomes more sensitive to the nuclear instabilities at the center of the star and a rigorous treatment of the latter becomes obligatory. In this talk we shall discuss the problem with a realistic equation of state to describe the white dwarfs in modified gravity taking into account the nuclear instabilities. A reliable limit of the maximum mass can be reached and put to test.

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