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Hadronic-to-Quark-Matter Phase Transition: Effects of Strange Quark Seeding.

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When a massive star depletes its fuel it may undergo a spectacular explosion; the supernova. If the star is massive enough, it can undergo a second explosion; the Quark nova. The origin for this second explosion has been argued to be the transition from Hadronic-to-Quark-Matter (Ouyed et al. 2013).
Hadronic-to-Quark-Matter phase transition occurs when hadronic (nucleated) matter under high temperatures and/or densities deconfines into what is called a quark-gluon plasma (QGP).
This talk will explore the required conditions for a star to undergo a Quark nova. In particular, under which conditions should the transition from Hadronic-to-Quark-Matter occur so that there is a second explosion for a massive star?
The talk will be at an introductory level and will present the results of theoretical and computational calculations performed to estimate the production rate of strange quarks by self-annihilation of dark matter determining whether or not dark matter self-annihilation can be responsible by itself to start a combustion in the core of a star for it to undergo a Quark nova.

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