Quark matter and fermionic dark matter compact stars
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Compact stars, made of quark matter and fermionic dark matter with arbitrary masses and interaction strengths, are studied by solving the Tolman–Oppenheimer–Volkoff equation of general relativity. The mass-radius relation for quark matter compact stars is obtained from the MIT bag model equation of state (EoS) with thin crust for different bag constants. The EoS of non-self-annihilating dark matter for an interacting Fermi gas with dark matter particle of 1-100 GeV mass is studied. For sufficiently strong interactions, the maximum stable mass of compact stars and its radius are controlled by the parameter of the interaction, both increasing linearly with the interaction strength. The mass-radius relation for compact stars made of strongly interacting fermions shows that the radius remains approximately constant for a wide range of compact stars.

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