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Axion effects on the nonradial oscillations of neutron stars

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We investigate the effects of including strong charge parity violating effects through axion field on the structure and the oscillation modes of the neutron stars with the possibility of a quark matter core. The effects of axions in quark matter is described through a t Hooft determinant interaction in the flavor space within the ambit of a three flavor Nambu–Jona-Lasinio model. The presence of axions seem softens the equation of state with having a larger core of quark matter compared to the case when their absence. This leads an enhancement of the f mode oscillation frequencies in hybrid stars.

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