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Effective suppression of r -modes within hyperonic stars

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A rotating neutron star with hyperonic core described by an effective chiral model with $\sigma - \rho$ cross coupling within mean field approximation is considered. The hyperonic bulk viscosity coefficient caused by non-leptonic weak interactions is calculated and its role in suppressing the gravitationally driven r -modes is investigated. Various other relevant damping timescales are calculated and are used to obtain the r -mode instability window. Our model predicts a significant reduction of the unstable region between $10^8 - 10^9$ K due to hyperon bulk viscosity alone.

Session

Heavy Ions and QCD

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