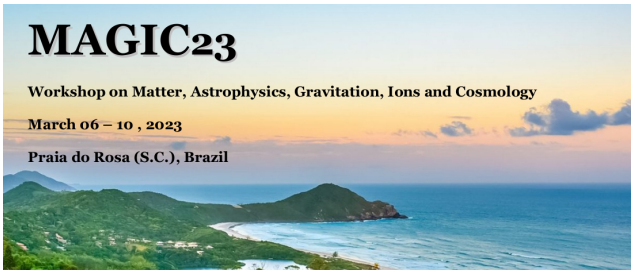

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The model of magetar crustal mageto-thermal evolution and application to AXP 1E 2259+586

Magnetars are a type of pulsars powered by magnetic field energy. Part of X-ray luminosities of magnetars in quiescence have a thermal origin and can be fitted by a blackbody spectrum with temperature kT $\sim 0.2 - 0.6$ keV, much higher than the typical values for the rotation-powered pulsars. The observation and theoretical study of magnetar are one of hot topics in the field of pulsar research. The persistent thermal emissions and bursts of magnetars indicates the presence of some internal heat sources in their outer crusts. In this work, we have formulated the energy balance equation and used it to study the thermal evolution in the magetar crust by considering the heating mechanism, whcih inculde the Ohmic decay and the electron capture processes. This model can be explain the chang the X-ray luminosity of AXP 1E 2259+586 associated with the supernova remnant CTB 109.

Key words:Magnetar, mageto-thermal evolution, electron capture,
1E 259+586

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