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Hybrid stars in a strong magnetic field

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We study the effects of high magnetic fields on the particle population and equation of state of hybrid stars using an extended hadronic and quark SU(3) non-linear realization of the sigma model. In this model the degrees of freedom change naturally from hadrons to quarks as the density and/or temperature increases. The effects of high magnetic fields and anomalous magnetic moment are visible in the macroscopic properties of the star, such as mass, adiabatic index, moment of inertia, and cooling curves. Moreover, at the same time that the magnetic fields become high enough to modify those properties, they make the star anisotropic.

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