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Modeling anisotropic magnetized strange quark stars

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When studying the structure of magnetized compact objects, the anisotropy in their equations of state (EoS), due to the magnetic field, must be taken into account. This anisotropy consists in the splitting of the pressure in two components, one parallel and the other perpendicular to the magnetic field. In this work, we compare the size and shape of magnetized strange quark stars using three different sets of structure equations. First, we solve the standard isotropic Tolman-Oppenheimer-Volkoff equations for the parallel and perpendicular pressures independently. Then, we obtain the mass-radii curves of the magnetized strange quark stars using axially symmetric metrics in cylindrical and spherical coordinates, this last one called the gamma-metric. The differences between the results obtained in each case are discussed.

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