

Closed-Form Relativistic Solutions for Anisotropic Staller Models

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Abstract : This study develops closed-form solutions for Einstein's field equations for spherically symmetric anisotropic matter distribution, utilizing the space-time geometry of Finch-Skea. The resulting class of solutions can be employed as strong models for 4U 1820-30, 4U 1608-52, and Cen X-3 pulsars by taking into account their physical admissibility. Graphical methods are employed to examine many physical characteristics of the model, including energy density, mass, pressures, anisotropy factor, equilibrium energy conditions, and stability analysis. This model allows a detailed analysis of the physical parameters and properties of the three compact objects.

Keywords : anisotropy factor, pulsars, stability analysis, finch-skea geometry

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