



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PDE

Existence of rotating stars with variable Entropy

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Abstract

Rotating stars can be modeled by steady solutions to the Euler-Poisson equations. An extensive literature has established the existence of rotating stars for given differentially rotating angular velocity profiles. However, all the existing results require the angular velocity to depend on the distance to the rotation axis, but not on the distance to the equatorial plane. Incidentally, all these solutions have constant entropy within the star. In this talk, I will present a recent result which is the first that allows a general rotation profile, without restrictions. It is also the first result that allows genuinely changing entropy within the star. The variation of entropy causes the previous methods used to construct steady solutions inapplicable. We discover a div-curl reformulation of the problem and perform analysis on the resulting elliptic-hyperbolic system. This is joint work with Juhi Jang and Walter Strauss.

Date: 3 November 2023 (Friday)

Time: 9:30am

Zoom Meeting: <https://hkust.zoom.us/j/98531866133> (Passcode: 045613)

All are Welcome!