

SAIP 2011



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Stellar perturbation via Lie derivatives.

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Content :

Perturbation theory uses Lagrangian techniques that require vector fields to be compared at finitely separated points. This method can be generalised to the strong gravitational field regime in one of two ways, using either covariant or Lie derivatives. In this paper, I argue that those methods based on the Lie derivative are more useful. The Lie derivative provides a clear picture of how the deformation of the fluid flow takes place. It also provides a natural way to discuss large perturbations. I apply this method to some elementary stability problems in the study of stellar structure.

Level (Hons, MSc, PhD, other)? :

Research

Consider for a student award (Yes / No)? :

No

Short Paper :

Yes

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