ICTS Fluid Seminar (HYBRID)

Title : Compactified Hyperboloidal Evolution in Numerical Relativity

Speaker : Shalabh Gautam (ICTS -TIFR, Bengaluru)

Date : Friday 1st September, 2023

Time : 11:00 AM (IST)

Abstract : One symmetric hyperbolic formulation of the Einstein Field Equations~(EFEs) is in generalized harmonic gauge. The choice of gauge is generally related to the coordinates used to cast the~EFEs within a spacetime foliation. A naive choice of gauge adapted to hyperboloidal coordinates may not be the most optimal way to solve the~EFEs on these slices. In this talk, I shall discuss a choice of compactified hyperboloidal coordinates that not only are physically motivated but also facilitate mapping future-null infinity onto a finite computational grid. I shall give a prescription to decouple the choice of gauge from this choice of coordinates to maintain the hyperbolicity of the~EFEs. Later, I shall introduce a numerical scheme that assures stability for a class of linear hyperbolic systems on these slices. Finally, I shall discuss the possibility of extending this numerical scheme to the initial value problems for the~EFEs on these slices.

Venue : **Offline:** Chern Lecture Hall (ICTS)

Online: Please click the below link to join the seminar

https://icts-res-in.zoom.us/j/82774647641?pwd=V0lHbktzM29zVFdaT1NKb1hETTNlQT09