



ICTS Seminar (ONLINE)

Title : Breakdown of Einstein's Gravity

Speaker : Puskar Mondal (Harvard University, USA)

Date : Thursday, 30th November 2023

Time : 10:00 AM (IST)

Abstract : It is important to understand under which analytical conditions, the solutions of non-linear hyperbolic partial differential equations (PDEs) break down in finite time (finite time blow-up). Einstein's equations of general relativity while expressed in an appropriate gauge fall under the category of quasi-linear hyperbolic PDEs and exhibit extremely rich characteristics. In this context, the finite time blow-up property is very closely tied to singularity formation and Penrose's weak cosmic censorship conjecture. In this talk, I will present a new technique to handle the non-linear geometric PDEs and in particular, Einstein's equations. I will give sharp estimates on the relevant geometric entities that allow one to continue the generic solutions (no symmetry or restriction on the size of the initial data) of Einstein's equations indefinitely in the future in 'time' direction without encountering finite time blow-up. A null structure that is verified by the non-linear terms turns out to be crucial for this result. As a corollary, I show this technique recovers the classic Eardley-Moncrief and Klainerman-Rodnianski 'global existence' result for Yang-Mills fields propagating on a background globally hyperbolic spacetime.

Venue : Online: Please click on the below link to join the seminar

<https://zoom.us/j/94076715760?pwd=dkkvUHFwS0FFcUx6SDg1R2M1NTcrdz09>

Meeting ID: 940 7671 5760

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