PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement

facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS049/2022

Hydrodynamics and Computation in Astrophysics

Name of the PMRF student

Alankar Dutta

Required background of the students taught

Basics of fluid dynamics, partial differential equation. Preliminary experience in programming and computation, preferably in Python, is desired.

Online session coordinator

Will be chosen from the list of registrants

Details of the content of the module

Computational hydrodynamics is essential in astrophysical context to understand the structure, formation and evolution of galaxies, clusters and their environments.

In this course, I'll introduce the fundamental numerical methods used in Astrophysical hydrodynamic simulations. This course can be thought of as a brief introduction to numerical fluid dynamics for astrophysical applications.

However, many of the topics that will be covered is extremely general and a learner may find it useful in the broader context of computation and numerical hydrodynamics.

If time permits, I might also cover certain topics related to data analysis and visualization of hydrodynamic simulations and high performance computing techniques employed in large scale computer simulations.

Schedule of the module

Friday 11:30 -12:30 (IST)

Saturday 19:30 – 20:30 (IST)

Classes start from 16th December, 2022

Classes end tentatively on 28th January, 2023

Meeting link : Will be shared later

Link

Contact email ID: alankardutta@iisc.ac.in

Registration link: https://forms.gle/c3DSdA9t7fDaqpKa9