UH
Universität Hamburg
DER FORSCHUNG I DER LEHRE I DER BILDUNG

CHAMPP
CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Summer Term 2022

Magneto Hydrodynamic Simulations Using the FLASH AMR Code

Robi Banerjee

Course Description:

Modern research in astrophysics is strongly based on numerical simulations. As many environments and objects in astrophysics can be described in terms of magnetised gas physics, i.e. magneto-hydrodynamics, computer codes which cover those areas are applied to conduct research for instance in star formation and on the dynamics of cosmic magnetic fields. One example of such a code is the FLASH Code developed by the University of Chicago, but many other tools are used in the community (e.g. AREPO, ATHENA, GADGET3, PENCIL, PLUTO, ...).

In this course we are getting acquainted with the FLASH Code to setup own problems and to run example simulations. Furthermore, we discuss results from past and ongoing numerical research projects as well as related topics.

Prerequisites:

- Introduction to Astronomy & Astrophysics
- basic programming skills
- basic knowledge of hydrodynamics and magneto-hydrodynamics

Literature:

- `www.flash.uchicago.edu/site/index.shtml`
- `flash.rochester.edu/site/flashcode`
- `flash.rochester.edu/site/flashcode/user_support/flash4_ug_4p62.pdf`
- `hsweb.hs.uni-hamburg.de/projects/star-formation/teaching_FLASH-lecture-HiPACC2013.shtml`

Date and Place: Wed, 11:00–12:30, Sternwarte Bergedorf
Starting on: 6 April 2022