

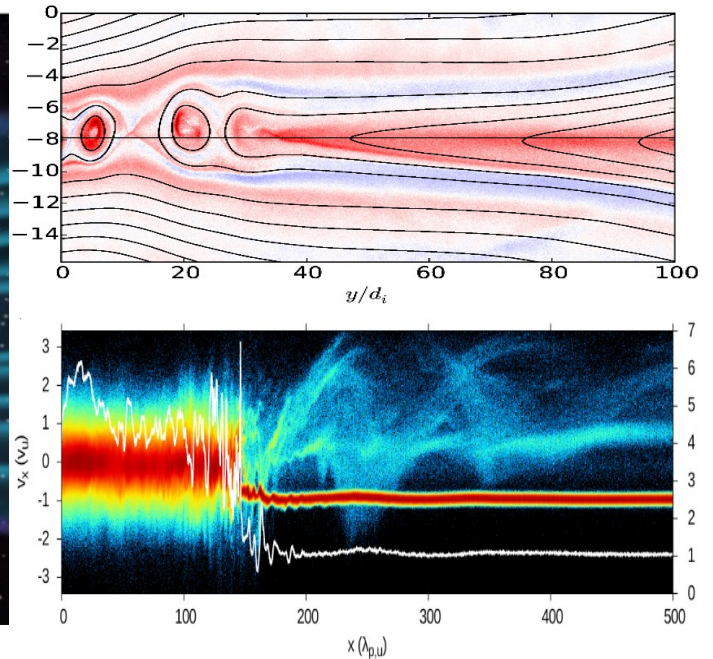
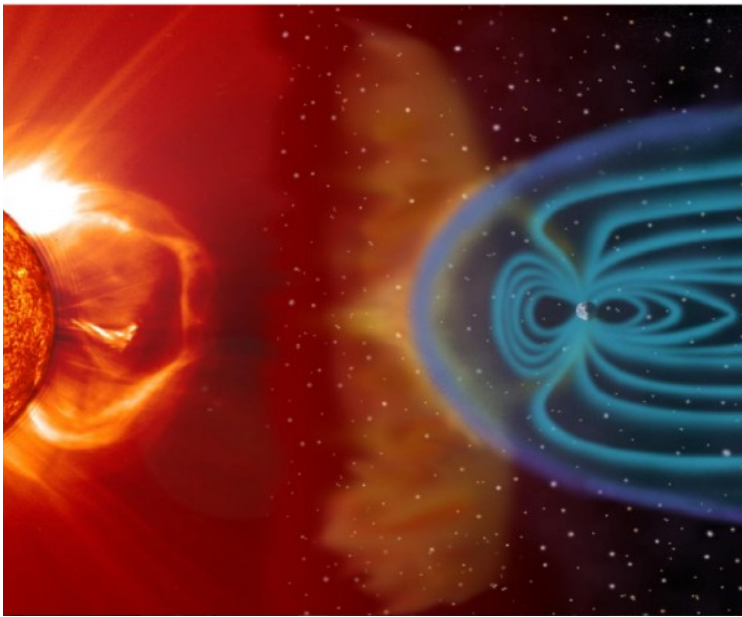


Lecture

SPACE AND ASTROPHYSICAL PLASMAS - MODELS AND NUMERICAL SOLUTIONS



Prof. Dr. Jörg Büchner, Dr. Patricio Muñoz
Winter Semester 2019/20 (TU:3251L10210; FU:20122101)
Time: Fridays 10-12, starting 18.10.19, Place: EW 809/10



This lecture introduces magnetohydrodynamic (MHD) and kinetic (PIC/Vlasov) models for the description of astrophysical plasmas and appropriate methods of their numerical simulation. Algorithms for the optimum solution of partial differential equations (PDEs) for appropriate initial and boundary conditions will be explained, Lagrangian and Eulerian methods, finite differences as well as spectral discretizations of elliptic, hyperbolic, parabolic PDEs. The principles of test particle descriptions by solving ordinary DEs will also be treated.

LITERATURE: Büchner, Dum, Scholer: Space Plasma Simulation, Springer Lecture Notes in Physics, more at:
<https://www-astro.physik.tu-berlin.de/SMART>