

IX Seminar on Software for Nuclear, Subnuclear and Applied Physics.  
Technology Transfer Workshop



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## Some strategies for modeling magnetically confined plasmas

*Thursday, 31 May 2012 09:00 (2 hours)*

Plasma modeling is a very challenging task, since electrons and ions typically exhibit collective behaviors due to long-range Coulomb interaction. Several simulation strategies exist, each one able to highlight some specific features of the plasma: e.g. magnetic confinement mechanisms, electron-wave interaction, etc. The possible approaches span from pure Monte-Carlo methods, including interparticle collisions, to ray tracing calculations, in order to model the propagation, scattering and absorption of electromagnetic waves. A general overview of plasma physics, along with the description of the most common simulation approaches, will be given during the seminar. The last part of the lecture will be specifically dedicated to self-consistency in plasma modeling, that is especially required when simulating spontaneous or induced formation of plasma waves, non-linearities, turbulence.

**Presenter:** Dr MASCALI, David (INFN - Laboratori Nazionali del Sud)