



Contribution ID: 4

Type: Poster

TH/P2-01: The European Transport Solver: an Integrated Approach for Transport Simulations in the Plasma Core

Tuesday, October 9, 2012 2:00 PM (4h 45m)

The “European Transport Solver”(ETS) is the new modular package for scenario simulations developed within the EFDA Integrated Tokamak Modelling (ITM) Task Force. It solves 1-D transport equations to which the geometry (2-D equilibrium), the transport coefficients and the sources are provided by stand alone modules coupled in a self consistent way to the transport solver through generalized data structures. It uses the KEPLER collaborative software environment to compose and manage the scientific workflows, where physics modules are built into the ETS workflows as precompiled “actors”. The high level of modularity of KEPLER allows one to have several complex workflows solving similar problems (for instance, those can either solve for the electron density or the ion density). This paper presents the status of the ETS developments, the results on verification and validation of the package and its first physics applications.

Country or International Organization of Primary Author

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Collaboration (if applicable, e.g., International Tokamak Physics Activities)

Integrated Tokamak Modelling Task Force

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Session Classification: Poster: P2

Track Classification: THC - Magnetic Confinement Theory and Modelling: Confinement