Contribution ID: **225** Type: **not specified**

ISDEP, a Fusion Application Deployed on Volunteer Computing Platform

Friday, 17 September 2010 09:50 (10 minutes)

Nuclear fusion is the process by which multiple atomic nucleus join together to form a heavier nucleus. It occurs
naturally in the core of stars. Fusion could be the clean and sustainable energy source of the future.

ISDEP (Integrator of Stochastic Differential Equations for Plasmas) is a Monte Carlo code developed by CIEMAT and
BIFI which solves neoclassical transport in fusion devices. ISDEP integrates a large number of independent particle
trajectories and extracts statistical information from them. Thus, there is no need of communication between processes
and the code scales perfectly in distributed computing platforms.

Using volunteer computer resources, specifically deploying it in the EDGeS@home and Ibercivis projects, we've simulated
several fusion processes in Tokamaks reactors, collecting a huge amount of data that will be useful for understanding
the physical processes in ITER.

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Session Classification: Supporting EGI user communities with Desktop Grid resources