



Contribution ID: 648

Type: **Poster**

## **EX/P4-18: MHD Events and Transport Barriers in TJ-II Plasmas**

*Wednesday, October 10, 2012 2:00 PM (4h 45m)*

The physics of hot plasmas in toroidal sheared magnetic fields is common to tokamaks and stellarators and there are good reasons to believe that so is the physics of spontaneous formation of transport barriers. Both types of device have found relationships between the presence of magnetic resonances and the onset of transport barriers. In particular, the TJ-II stellarator, a Helic device that can operate at different values of the vacuum rotational transform ( $\iota \sim 1$ ) at low magnetic shear, has permitted the identification of a cause-effect relationship between a proper location of magnetic resonant layers and the L-H transition. To stress the importance of the magnetic structure, here we study MHD events that generate in the plasma bulk and propagate until they reach a resonant layer. Depending on the plasma conditions (e.g. collisionality and order of the rational  $\iota$ ) the avalanche may traverse the resonant layer, get stopped at its location, or trigger the formation of either an internal or edge transport barrier depending on the location of the magnetic resonance. Since external control on the location and magnitude of resonant layers is technically feasible, these studies suggest a harmless means of transport control including transport barriers in toroidal plasmas for magnetic confinement fusion.

### **Country or International Organization of Primary Author**

Spain

**Primary author:** Mr LÓPEZ-BRUNA, Daniel (Spain)

**Co-authors:** Dr LÓPEZ-FRAGUAS, Antonio (CIEMAT); Dr ASCASÍBAR, Enrique (CIEMAT); Dr OCHANDO, María Antonia (CIEMAT)

**Presenter:** Mr LÓPEZ-BRUNA, Daniel (Spain)

**Session Classification:** Poster: P4

**Track Classification:** EXC - Magnetic Confinement Experiments: Confinement