



Contribution ID: 799

Type: **Poster**

PD/P8-15: First Observations of ELM Triggering by Injected Lithium Granules in EAST

Friday, 12 October 2012 14:00 (4h 45m)

Large transient events, including edge localized modes (ELMs), would be problematic for high power fusion devices, including ITER, because of the associated large, periodic heat loads on plasma facing components. Two methods to address this issue are elimination of large ELMs altogether with, e.g. 3-D magnetic perturbations, or controlled triggering of rapid, small ELMs for a manageable transient heat load. One proven method for ELM triggering involves injection of periodic, high-speed cryogenic deuterium pellets. The use of fuel pellets, however, introduces the prospect of increased plasma density; while recent research¹ has nearly eliminated density increases, the flexibility to use pellet materials other than fuel is still desirable. In this paper, we report the first results of ELM pace-making with lithium granules accelerated into H-mode discharges at the outer midplane in the EAST device, using a rotary motor to impel a controllable velocity, and hence a controllable penetration depth.

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Session Classification: Poster: P8

Track Classification: PD - Post Deadline