

Pellet interaction with runaway electrons

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Abstract

We describe results from recent experiments studying interaction of solid polystyrene pellets with a runaway electron current channel generated after cryogenic argon pellet rapid shutdown of DIII-D. Fast camera imaging shows the pellet trajectory and continuum emission from the subsequent explosion, with geometric calibration providing detailed explosion analysis and runaway energy. Electron cyclotron emission also occurs, associated with knock-on electrons broken free from the pellet by RE which then accelerate and runaway, and also with a short lived hot plasma blown off the pellet surface. In addition, we compare heating and explosion times from observations and a model of pellet heating and breakdown by runaway interaction.

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