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☐ Theory ☒ Experiment

Control of Plasma Stored Energy for Burn Control Using DIII-D In-Vessel Coils,* R.J. Hawryluk, B.A. Grierson, E. Kolemen, R. Nazikian, W.M. Solomon, *PPPL*; N.W. Eidietis, A.W. Hyatt, C. Paz-Soldan, *GA*; and S. Wolfe, *MIT* –A new approach has been experimentally demonstrated to control the stored energy by applying a non-axisymmetric magnetic field using the DIII-D in-vessel coils to modify the energy confinement time. In relatively low collisionality DIII-D discharges, the application of non-axisymmetric magnetic fields results in a decrease in confinement time and density pumpout. Control of the stored energy was demonstrated by the application of non-axisymmetric fields while using gas puffing to compensate the density pumpout in the pedestal. Since the fusion power in a power plant operating at high Q_{DT} can be related to the plasma stored energy and hence, is a strong function of the energy confinement time, the application of non-axisymmetric fields may be an effective technique to adjust the fusion power in a power plant.

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