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Assessment of NSTX-U pedestal control and disruption avoidance FIL ALEXANDRE, Princeton University — We report on the pedestal control and disruption avoidance strategies in NSTX-U. Edge localized modes (ELMs) represent a challenge to future fusion devices, due to the high heat fluxes on plasma facing surfaces. One aim of NSTX-U is to characterize the H-Mode pedestal structure at increased BT, Ip and NBI heating power and compare it to NSTX. We will assess the pedestal stability in both standard and snowflake configurations and identify the underlying mechanisms controlling the pedestal structure using the high spatial resolution edge diagnostics (e.g., BES, ME-SXR, bolometer). The new capabilities of NSTX-U will be used to effectively control the pedestal for optimum performance (e.g. LGI, molecular cluster injector). Control tools already deployed on EAST and DIII-D will be used. Disruptions also represent a major challenge for ITER and future devices due to the high heat fluxes on PFCs, electromagnetic forces on the structure and the generation of runaway electrons during the current quench. We will report on active resistive wall mode and plasma rotation control for disruption avoidance in NSTX-U. This work is supported by the US DOE under DE-AC02-09CH11466

Fil Alexandre
Princeton University

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