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Divertor power loads during thermal quench in BOUT++ simulations[1] BEN ZHU, XUEQIAO XU, Lawrence Livermore Natl Lab, XIANZHU TANG, Los Alamos Natl Lab — To better understand plasma turbulence and transport dynamics at the tokamak edge region and resulting divertor power loads during the disruption thermal quench phase, we perform a series of BOUT++'s six-field drift-reduced Landau fluid turbulence simulations. In these simulations, appropriate sourcing levels of particles and energy from the core side are first determined by obtaining quasi-steady-state plasma profiles. The amplitudes of these sources are then lifted to mimic the onset of thermal quench in the disruption process. As the particle and energy influx from core to edge increases, plasma density and temperature are both elevated at the pedestal top and their radial profiles steepen, which eventually triggers an ELM-like burst that injects large amount of particles and energy outwards across the separatrix, resulting not only a sudden enhanced divertor heat flux peak but also a broadened width. LLNL-ABS-812058

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