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Edge Properties of DIII–D High Performance and Extended Duration Pumped NCS Discharges,[1] C.J. LASNIER, M.E. FENSTERMACHER, G.D. PORTER, B.W. RICE, B.W. STALLARD, Lawrence Livermore National Laboratory, R. MAINGI, Oak Ridge Associated Universities, A.W. LEONARD, General Atomics, J.G. WATKINS, Sandia National Laboratories, Albuquerque — We present comparisons of the global power and particle balance in negative central magnetic shear (NCS) discharges during the short-duration high-performance phase and during long-duration NCS performance prolonged by cryopumping. We also compare NCS VH–mode discharges. The NCS short high performance phase has a much lower fraction of the total input power Pin flowing into the boundary, less core radiation, and larger fractional rate of stored energy increase $(dW/dt)/P_{\rm in}$ compared to VH–mode discharges. The extended duration NCS discharges reach $dW/dt \approx 0$, so that radiated and conducted power are a larger fraction of the $P_{\rm in}$ than in the short-duration phase. Scrape-off layer (SOL) profiles in NCS are similar to VH–mode. The rate of density rise relative to beam fueling at the L to H transition time is 1/3 of the value for VH transitions, which is in turn 1/2 that for L–to-ELMing-H–mode transitions.

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