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Long-Pulse Beta Limit and NeoclassicalTearing in DIII–D,[1] R.J. LA HAYE, L.L. LAO, E.J. STRAIT, T.S. TAYLOR, General Atomics — The maximum long-pulse beta in elming H–mode single null divertor DIII–D tokamak discharges with sawteeth and similar in shape to the proposed ITER device is found to be limited not by ideal modes but by resistive MHD instabilities. A hard disruptive beta limit is due to an m/n = 2/1 rotating tearing mode. Higher stable beta up to the ideal limit of $\beta_N = \beta(\%)/(\mathrm{I/a/B})=4\ell_i$ is successfully achieved by operating at higher density and collisionality. The dependence of the tearing beta limit on collisionality (and gyroradius) will be presented and compared to neoclassical tearing theory with the consequences for ITER addressed.

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[X] Prefer Oral Session
[ ] Prefer Poster Session

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