Abstract Submitted
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**The LTX-$\beta$ Research Program**[1] R. MAJESKI, R.E. BELL, D.P. BOYLE, P.E. HUGHES, R. KAITA, T. KOZUB, E. MERINO, X. ZHANG, PPPL, T. M. BIEWER, J.M. CANIK, D.B. ELLIOTT, M.L. REINKE, ORNL, J. BIALEK, Columbia U., C. HANSEN, T. JARBOE, U. Washington, S. KUBOTA, T. RHODES, UCLA, M.A. DORF, T. ROGNLIEN, F. SCOTTI, V.A. SOUKHANOVSKII, LLNL, B.E. KOEL, Princeton U., D. DONOVAN, A. MAAN, U. Tennessee — LTX-$\beta$, the upgrade to the Lithium Tokamak Experiment, approximately doubles the toroidal field (to 3.4 kG) and plasma current (to 150 – 175 kA) of LTX. Neutral beam injection at 20 kV, 30 A will be added in February 2018, with systems provided by Tri-Alpha Energy. A 9.3 GHz, 100 kW, short-pulse (5-10 msec) source will be available in summer 2018 for electron Bernstein wave heating. New lithium evaporation sources will allow between-shots recoating of the walls. Upgrades to the diagnostic set are intended to strengthen the research program in the critical areas of equilibrium, core transport, scrape-off layer physics, and plasma-material interactions. The LTX-$\beta$ research program will combine the capability for gradient-free temperature profiles, to stabilize ion and electron temperature gradient-driven modes, with approaches to stabilization of $\nabla$n-driven modes, such as the trapped electron mode (TEM). Candidate stabilization mechanisms for the TEM include sheared flow stabilization, which can be tested on LTX-$\beta$. The goal will be to minimize anomalous transport in a low aspect ratio tokamak, which would lead to a very compact, tokamak-based fusion core.

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