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Catastrophic global-avalanche of a hollow pressure filament[1] B. VAN COMPERNOLLE, M. J. POULOS, G. J. MORALES, University of California, Los Angeles — New results are presented of a basic heat transport experiment performed in the Large Plasma Device at UCLA. A ring-shaped electron beam source injects low energy electrons along a strong magnetic field into a preexisting, large and cold plasma. The injected electrons are thermalized by Coulomb collisions within a short distance and provide an off-axis heat source that results in a long, hollow, cylindrical region of elevated plasma pressure. The off-axis source is active for a period long compared to the density decay time, i.e., as time progresses the power per particle increases. Two distinct regimes are observed to take place, an early regime dominated by multiple avalanches [1], identified as a sudden intermittent rearrangement of the pressure profile that repeats under sustained heating, and a second regime dominated by broadband drift-Alfvén fluctuations. The transition between the two regimes is sudden and global, both radially and axially. The initial regime is characterized by peaked density and temperature profiles, while only the peaked temperature profile survives in the second regime. Recent measurements at multiple axial locations provide new insight into the axial dynamics of the global avalanche. [1] B. Van Compernolle et al., Phys. Rev. E 91, 031102 (2015)

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