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Torsion Pendulum energy dissipation due to ^{3}He in aerogel. Dissipation signature of the A-phase NIKOLAY ZHELEV, ROBERT BENNETT, Cornell University, JOHANNES POLLANEN, California Institute of Technology, ERIC SMITH, Cornell University, WILLIAM HALPERIN, Northwestern University, JEEVAK PARPIA, Cornell University — A torsion pendulum excited at acoustic frequencies was used to measure the dissipation Q^{-1} and period shift of ^{3}He confined in a 98% open aerogel, compressed by 10% along the axial direction. Data was taken in the range between 100mK and T_c, as well as below T_c for a series of pressures. After accounting for bulk and empty cell contributions, Q^{-1} is seen to be pressure and temperature independent in the normal state. The dissipation is larger than expected, which can be accounted for either by invoking a very long frictional relaxation time or by taking into account the internal friction in the aerogel that is affected by mass loading of ^{3}He. In contrast, the dissipation in the superfluid state depends strongly on temperature and pressure. The A phase (observed on cooling) shows a higher dissipation than the B phase (observed on warming); the excess dissipation is greater at high pressures.

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