Switching Behaviour of a Quartz Tuning Fork in Superfluid ^{4}He

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Here we report our observations of hysteresis and switching between linear and non-linear damping at temperatures below 10 mK for a quartz tuning fork immersed in superfluid ^{4}He and driven at resonance. We associate linear damping with laminar flow around the prongs of the fork, and non-linear damping with the production of vorticity in a "turbulent" regime. By controlling the prong velocity we have observed metastability of both the laminar and the turbulent flow states, and present measurements of the lifetime of each state as a function of the fork velocity.

Section: VT - Vortices and turbulence

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