

Driving a Nanomechanical Resonator with a Phonon Wind in Superfluid ^4He

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We use nanomechanical resonators of an extremely high-quality factor to probe superfluid ^4He at mK temperatures. The high sensitivity of these devices to thermal excitations in the environment makes it possible to drive them through the resonant momentum transfer of phonons generated by a nearby heater. This so-called "phonon wind" is a reverse thermomechanical effect that until now has never been demonstrated.