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Sound in a Unitary Fermi Gas PARTH PATEL, BISWAROOP MUKHERJEE, ZHENJIE YAN, AIRLIA SHAFFER, CEDRIC WILSON, LEV KENDRICK, RICHARD FLETCHER, Massachusetts Institute of Technology, JULIAN STRUCK, Ecole Normale Suprieure / PSL Research University, CNRS, MARTIN ZWIERLEIN, Massachusetts Institute of Technology — Low temperature thermodynamics and transport properties of systems ranging from solids to quantum gases are determined by phonons (sound). We measure important properties of phonons in a homogeneous unitary Fermi gas, including its dispersion relation and quantum limited attenuation. We present our measurements of the sound diffusion coefficient, a quantity which fully characterizes sound attenuation, and is closely related to viscosity and thermal conductivity of the Fermi gas.

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