

Abstract Submitted
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Superfluid density profile in a trapped Fermi gas NICOLAI NYGAARD, University of Aarhus, HUI HU, Renmin University of China and University of Queensland, XIA-JI LIU, University of Queensland — We present a microscopic calculation of the local superfluid density for a Fermi gas with a spatially varying density profile. By imposing an infinitesimal twist on the phase of the order parameter and calculating the resulting strain energy perturbatively, we find the helicity modulus, which is directly tied to the density of the superfluid component. The superfluid density determines the moment of inertia and in a two-fluid description of the hydrodynamics it is fundamental in a calculation of the collective mode frequencies.

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