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Signature of the FFLO phase in the collective modes of a trapped ultracold Fermi gas[1] JONATHAN EDGE, NIGEL COOPER, University of Cambridge — We study theoretically the collective modes of a two component Fermi gas with attractive interactions in a quasi-one-dimensional harmonic trap. We focus on an imbalanced gas in the Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) phase. Using a mean field theory, we study the response of the ground state to time-dependent potentials. For potentials with short wavelengths, we find dramatic signatures in the large-scale response of the gas which are characteristic of the FFLO phase. This signature is present both for zero temperature and for small but finite temperature. This response provides an effective way to detect the FFLO state in experiments.

[1]EPSRC

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