

Abstract Submitted
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Fermionic sound in Bose-Fermi mixtures ANDREY GROMOV,
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emerge as a result of spontaneously broken symmetry- translational in the case
of solids and normal fluids and U(1) phase symmetry in the case of superfluids. Col-
lective modes like these, which result from the breaking of conventional symmetries,
usually have bosonic statistics. We explore the consequences of a subtle fermionic
symmetry that appears in Bose-Fermi mixtures when both species have equal mass.
In particular, we predict the existence of a novel fermionic collective excitation and
comment on its properties. We show that this mode persists in the presence of a
trapping potential and contact interaction. We describe the fate of these excitations
when there is a small mass difference between the two particle species. Lastly, we
discuss the possibility of observing this mode in experiments, for example in trapped
 $^{174}\text{Yb} - ^{173}\text{Yb}$ Bose-Fermi mixtures.

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