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Superfluid mixture of a Bose-Einstein condensate and a crossover superfluid SHANSHAN DING, YICAI ZHANG, SHIZHONG ZHANG, Department of Physics and Center of Theoretical and Computational Physics, The University of Hong Kong — In this presentation, I discuss the influence of Boson-fermion interactions in a superfluid mixture consisting of a weakly interacting Bose-Einstein condensate and a fermionic superfluid along BEC-BCS crossover. Within random phase approximation, we calculate how the sound velocity changes with the inter-species interactions; the results are consistent with the analytic calculation in hydrodynamic regime. We further calculate the dynamic structure factor in this superfluid mixture which can be measured using Bragg spectroscopy. Relevance to the recent experiments on superfluid mixture will be commented.

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