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Mixing of Bose and Fermi Superfluids B. RAMACHANDHRAN, S.G. BHONGALE, H. PU, Department of Physics and Astronomy, and Rice Quantum Institute, Rice University, Houston, TX 77005, USA — We construct the finite temperature phase diagram of an interacting mixture of Bose and Fermi superfluids. Our study reveals a unique region of phase space where the BCS instability of the Fermi surface coincides with the first-order instability of the mixture towards phase separation. We illustrate how this intriguing interplay manifests in trapped configurations, thereby providing important constraints for observing superfluidity in experiments involving Bose-Fermi mixtures.

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