

Abstract Submitted
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Zero-temperature phase diagram of a two-species atomic Bose-Einstein condensates with an interspecies Feshbach resonance¹ LU ZHOU, JING QIAN, East China Normal University, HAN PU, Rice University, WEIPING ZHANG, East China Normal University, HONG Y. LING, Rowan University, EAST CHINA NORMAL UNIVERSITY COLLABORATION, RICE UNIVERSITY COLLABORATION, ROWAN UNIVERSITY COLLABORATION — We consider a mixture of two-species atomic Bose-Einstein condensates coupled to a bound molecular state at zero temperature via interspecies Feshbach resonance. The interspecies Feshbach coupling precludes the possibility of doubly mixed phases while enables not only the pure molecular superfluid but also the pure atomic superfluids to exist as distinct phases. We construct the phase diagram and show that this system is able to support a rich set of phase separations, including that between two distinct mixed atom-molecule phases. We pay particular attention to the effects of the Feshbach coupling and the particle collisions on the miscibility of this multi-component condensate system.

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