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A simple approach to BEC-BCS crossover at a Feshbach resonance in a degenerate Fermi gas JUHA JAVANAINEN, ANDREW CARMICHAEL, University of Connecticut — We present a simplified theoretical approach to the Feshbach resonance in a degenerate (effectively zero temperature) two-component Fermi gas. The key technical idea is to treat the bosonic molecules as a classical field, whereupon the hierarchy of the equations of motion for field correlation functions closes at the level of pair correlations. Topics to discuss include the shift of the Feshbach resonance induced by the Fermi sea, the effects of a nontrivial energy dependence of atom-molecule coupling, and BEC-BCS crossover in the limits of both weak and strong coupling.

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