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Feshbach-Resonant Interactions in ^{40}K and ^{6}Li Degenerate Fermi Gases MATT MACKIE[1], Temple University, JYRKI PIILO, School of Pure and Applied Physics, University of KwaZulu-Natal, Durban 4041, South Africa — We theoretically examine a system of Fermi degenerate atoms coupled to bosonic molecules by a Feshbach resonance, focusing on the superfluid transition to a molecular Bose-Einstein condensate dressed by Cooper pairs of atoms. This problem raises an interest because it is unclear at present whether bimodal density distributions observed recently in ^{40}K and ^{6}Li are due to a condensate of bosonic molecules or fermionic atom pairs. As opposed to ^{40}K, we find that any measurable fraction of above-threshold bosonic molecules are necessarily absent for the ^{6}Li system in question, which strongly implicates Cooper pairs as the culprit behind its bimodal distributions.

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