

Abstract Submitted
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Interaction and pairing of atoms in nonzero partial waves at ultracold temperatures¹ BO GAO, University of Toledo — We present analytic descriptions of atomic interaction at ultracold temperatures with emphasis on the Feshbach resonances in nonzero partial waves. The results, including formula for binding energies below the threshold and the descriptions of Feshbach/shape resonances above the threshold, are derived from the quantum-defect theory. We also introduce a generalized scattering length that is well defined and useful for all partial waves, to replace the traditional definition that fails for $l \geq 2$ due to the long-range van der Waals interaction.

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Bo Gao
University of Toledo

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