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Explicitly correlated Gaussian basis set expansion approach for few-body systems with spin-orbit coupling[1] QINGZE GUAN, DOERTE BLUME, Washington State Univ — The explicit correlated Gaussian (ECG) basis set expansion approach is a variational approach that has been used in various areas, including molecular, nuclear, atomic, and chemical physics. In the world of cold atoms, e.g., the ECG approach has been used to calculate the eigenenergies and eigenstates of few-body systems governed by Efimov physics. Since the first experimental realization of synthesized gauge fields, few-body systems with spin-orbit coupling have attracted a great deal of attention. Here, the ECG approach is customized to few-body systems with both short-range interactions and spin-orbit couplings. Benchmark tests and a performance analysis will be presented.

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