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Fast rotating clusters of fermions with general half integer spin
NEDELTCHO ZAHARIEV, TIN-LUN HO, The Ohio State University — We have studied the ground states of fast rotating Fermi gases with half integer spins. Remarkable correlations between spin and orbital angular momentum are found. Because of the similarity of scattering lengths in different angular momentum channels, density-density interaction dominates and the system has close to SU($2f+1$) symmetry. We have found general solution to the SU($2f+1$) symmetry case for both repulsive and attractive density interaction, and we have constructed simple "Hund's Rules" to describe the correlation between spin and orbital angular momentum in the ground state. Residual interactions split the degeneracy of the SU($2f+1$) symmetry ground state which leads to fine structures with regular patterns.

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