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Momentum distribution and Tan contact matrix for 1D spinor quantum gas in strong interacting limit[1] SHAH SAAD ALAM, LI YANG, HAN PU, Rice Univ — Using our previous work on the one-body density matrix (OBDM), we present a result for the momentum distribution for a 1D spinor quantum gas with arbitrary spin in the strongly interacting limit, and show how the momentum distribution can be used to characterize various quantum phases of the underlying effective spin Hamiltonian. Furthermore, we show how the Tan contact may be extracted from the momentum tail. Previous studies on Tan contact and the associated Tan relations focused on a few specific spinor systems, such as spinless bosons and spin-1/2 fermions. We discuss our ongoing investigation of the Tan contact matrix for a general spinor system.

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