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One-Body Density Matrix and Momentum Distribution of Strongly Interacting One-Dimensional Spinor Quantum Gases LI YANG, HAN PU, rice university — The one-body density matrix (OBDM) of a strongly interacting spinor quantum gas in one dimension can be written as a summation of products of spatial and spin parts. We find that there is a remarkable connection between the spatial part and the OBDM of a spinless hard-core anyon gas. This connection allows us to efficiently calculate the OBDM of the spinor system with particle numbers much larger than what was previously possible. Given the OBDM, we can easily calculate the momentum distribution of the spinor system, which again is related to the momentum distribution of the hard-core ayone gas.

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