

Abstract Submitted
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Highly polarized 1D Fermi gases near p-wave resonance YINFENG MA, XIAOLING CUI, Institute of Physics Chinese Academy of Sciences (CAS) — Based on the recently developed interaction renormalization for 1D p-wave interaction, we study the polaron physics in the 1D spin-1/2 Fermi gas near p-wave resonance. We use the variational approach up to two particle-hole excitations on top of the unperturbed Fermi sea, and find good convergence to the attractive polaron energy. We show that the attractive polaron becomes energetically unstable to the molecule formation as increasing the interaction strength, while the repulsive polaron branch features a broadened spectral width as approaching resonance indicating the instability due to atom loss. These properties are distinct from the polaron physics in 1D s-wave interacting Fermi gases, but share essential similarity to the 3D fermion system across s-wave resonance.

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