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**One-dimensional Fermi gases with odd-wave interaction**

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In this talk, I will discuss the intriguing physics induced by odd-wave interaction in one-dimensional(1D) Fermi gases. First, I will show that by applying a weak odd-wave attraction (or repulsion), the long-sought magnetic orders of itinerant Ferromagnetism (or Neel anti-ferromagnetism) can be conveniently engineered in the strongly interacting spin-1/2 trapped Fermi gas. Second, I will show that a spinless Fermi gas near odd-wave resonance and confined in optical lattices can be a promising system to realize the Kitaev chain model. By exactly solving the two-body problem we have established an effective lattice model for lowest-band fermions, which paves the way for quantum simulating Majorana fermions in 1D atomic systems.