Fermi gases in quantum wires

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Physics in low dimension is radically different from their three-dimensional counterpart and many paradigms governing standard matter break down in one or two dimensional systems. In this talk, I will present recent results on the realization of quantum wires where ultracold fermions are confined in quasi-dimensional geometries. In our setup, single-tube resolution allows for a quantitative thermometry of the system and a characterization of its 1D nature. I will also discuss how for many-body systems interactions affect one-dimensionality.

[1] De Daniloff et al.. In Situ Thermometry of Fermionic Cold-Atom Quantum Wires. Physical Review Letters, 127(11), 113602 (2021).