Mathematics and CS Seminar

Effective dynamics of tracer particles in a dense Fermi gas

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Host: Robert Seiringer

We consider the dynamics of few tracer particles in a d-dimensional box coupled to N fermions via a suitable pair interaction. After taking the large volume limit at positive Fermi momentum we consider the regime of high density, that is, large Fermi momentum. Assuming that the fermions are initially in the ground state of the kinetic energy, we show that a single tracer particle effectively decouples from the fermions and evolves like a free particle. We explain that this is based on a separation of scales between the tracer particle and the fast electrons at the Fermi surface. In the rest of the talk we discuss how the picture changes for more than one tracer particle and/or if one starts with an excited state for the fermions.

Thursday, February 11, 2021 04:15pm - 05:15pm
Online via Zoom

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