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Sine-Gordon: from coupled condensates to hydrodynamics

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The sine-Gordon model is an integrable field theory that captures the effective dynamics of a wealth of one-dimensional quantum systems, and thus is of central interest for a broad community. A convenient experimental platform consists of two tunnel-coupled onedimensional quasicondensates: the great tunability of this setup makes it a convenient quantum simulator of the field theory, realizing a sine-Gordon model with inhomogeneous couplings.

How does theory keep up with experimental challenges?

Generalized Hydrodynamics is a well-established framework to describe weakly-inhomogeneous integrable models: in this talk, I present an overview of the recent efforts by myself and collaborators to study the sine-Gordon model from a GHD perspective.

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