SFB/TRR 21 - Seminar
20. Juni 2011, Stuttgart

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Studies of Universality in Strongly Interacting ^{6}Li Fermi Gases with Bragg Spectroscopy

Universal relations for dilute, strongly interacting Fermi systems can be studied in ultracold fermionic ^{6}Li quantum gases using Bragg spectroscopy. Elastic collisions in strongly interacting Fermi gases become unitarity limited and independent of details of the atomic properties. The thermodynamic behaviour of these gases in any state or at any temperature is adequately described by universal relations. A central quantity that enters these relations is the contact parameter, which encapsulates the microscopic details of the system and varies with the temperature and interaction strength.
In particular the experimental verification of the universal relation for the two-body correlation function and the temperature dependence of the contact are discussed. We use Bragg spectroscopy with large momentum transfer and apply sum rules to extract the contact from Bragg spectra where either the momentum or energy transferred to an atomic sample is evaluated.

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