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## Revealing elementary excitations of one-dimensional Bose gases through their dynamical structure factor

*Tuesday, September 16, 2014 4:00 PM (30 minutes)*

Interactions are known to have dramatic effects on bosonic gases in low dimension: Not only does the ground state transform from a condensate-like state to an effective Fermi sea, but new fundamental excitations are predicted to appear which do not have any higher-dimensional equivalents. In this work, we trace these elusive excitations via their effects on the dynamical structure factor of arrays of one-dimensional strongly-interacting Bose gases at low temperature, probed by energy deposition through low-momentum Bragg excitations. The experimental signals are compared to recent theoretical predictions for the dynamical structure factor of the Lieb-Liniger model at finite temperatures. Our results demonstrate that the main contribution to the spectral widths can be explained from the dynamics of the interaction-induced excitations in the gas.

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