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**Finite-temperature dynamical structure factor of the one-dimensional Bose gas: From the Gross-Pitaevskii equation to the Kardar-Parisi-Zhang universality class of dynamical critical phenomena** AUSTEN LAMACRAFT, University of Cambridge, MANAS KULKARNI, Princeton University — We study the finite-temperature dynamical structure factor  $S(k,\omega)$  of a one-dimensional Bose gas using numerical simulations of the Gross-Pitaevskii equation appropriate to a weakly interacting system. The line shape of the phonon peaks in  $S(k,\omega)$  has a width proportional to  $|k|^{3/2}$  at low wave vectors. This anomalous width arises from resonant three-phonon interactions, and reveals a remarkable connection to the Kardar-Parisi-Zhang universality class of dynamical critical phenomena.

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