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Dynamical structure factor of one dimensional bosons in optical lattices ANIBAL IUCCI, University of Geneva, MIGUEL CAZALILLA, Donostia International Physics Center, ANDREW HO, University of Birmingham, THIERRY GIAMARCHI, University of Geneva — We investigate a one dimensional system of cold bosonic atoms in an optical lattice subjected to a time dependent periodic potential. We study the dynamic structure factor and the excitation spectrum in different regimes: superfluid and Mott insulator. In particular the strong interactions gives rise to a continuum of excitations in the superfluid phase. We discuss the application to recent experiments on bosonic tubes. We also discuss comparisons to higher dimension situations.

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