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Excitation spectra of the Bose-Hubbard model studied with QMC[1] PETER PIPPAN, HANS GERD EVERTZ, TU Graz — Ultracold atoms are nearly ideal experimental realizations of strongly correlated models. With the invention of new experimental techniques it is crucial to understand dynamical processes in such systems. We present QMC results of the dynamical structure factor and the one particle spectral function in one and two dimensions. We study the spectral signatures of the superfluid to normal fluid phase transition in 2D as well as the superfluid to Mott insulating transition in one and two dimensions. In addition, we present excitation spectra of trapped Bose-Einstein condensates.

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