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**Coherent Excitations Induced by Pumping a Mott System** YAO WANG, MARTIN CLAASSEN, Stanford University, BRIAN MORITZ, SLAC National Accelerator Laboratory, THOMAS DEVEREAUX, SLAC National Accelerator Laboratory/Stanford University — Time-domain or non-equilibrium dynamics of correlated materials has attracted attention due to the possibility to characterize, tune and create complex ordered states. To understand how single and multi-particle excitations develop in a strongly-correlated systems during a pulsed pump, we perform a time-resolved exact-diagonalization study on a single-band Hubbard model. Starting from the Mott insulator at half-filling, we observe the suppression of antiferromagnetism and development of low-energy charge excitations through a series of Floquet-like sidebands. By correlating with the numerically evaluated single-particle spectra in non-equilibrium, the transient dynamics of multi-particle excitations can be attributed to the interplay between virtual Floquet sidebands and change of density of states due to the existence of strong correlations. The autocorrelation of this time-dependent spectral function reflects that it is the resonance of floquet states and upper Hubbard band that causes the remnant change of charge and spin excitations. This nonperturbative, nonequilibrium and nonstatic study reveals the underlying physical process while correlated electrons are pumped in experiment and provide the opportunity of designing nonequilibrium state of matter by a short pulsed laser.

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