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Dynamics of competing orders in two-dimensional metals with antiferromagnetic exchange interactions WENBO FU, LING-YAN HUNG, SUBIR SACHDEV, Department of Physics, Harvard University — We study the dynamics of bond order parameters after a quantum quench in a two-dimensional square lattice model with nearest-neighbor exchange and repulsion, using an unrestricted time-dependent Hartree-Fock computation. The mean-field model can be constructed by a set of operators, including d-wave Cooper pair and particle-hole pair, which form a SU(4) algebra, and thus their equations of motion are closed. After the quench, we find enhanced oscillation amplitude of the d-wave charge order below superconducting critical temperature (T_c) as observed in recent experiments in $YBa_2Cu_3O_{6+x}$. We also observe a phase shift when crossing T_c and temperature-dependent frequencies.

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