

CORE-CM SEMINAR
Michigan State University

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**Amplitude modes and dynamic coexistence of competing orders
in multicomponent superconductors**

We study the nonequilibrium dynamics of an electronic model with competing spin-density-wave and unconventional superconductivity in the context of iron pnictides. Focusing on the collisionless regime, we find that magnetic and superconducting order parameters may coexist dynamically after a sudden quench, even though the equilibrium thermodynamic state supports only one order parameter. We consider various initial conditions concomitant with the phase diagram and in a certain regime identify different oscillatory amplitude modes with incommensurate frequencies for magnetic and superconducting responses. At the technical level we solve the equations of motion for the electronic Green's functions and self-consistency conditions by reducing the problem to a closed set of Bloch equations in a pseudospin representation. For certain quench scenarios the nonadiabatic dynamics of the pairing amplitude is completely integrable and in principle can be found exactly.

Thursday, Oct. 15, 2015
12:00 NOON
Room 1400 – Biomedical & Physical Sciences