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Stability of Quantum Critical Points in the Presence of Competing Orders JIAN-HUANG SHE, JAN ZAANEN, Leiden University, ALAN BISHOP, ALEXANDER BALATSKY, Los Alamos National Laboratory — We investigate the stability of Quantum Critical Points (QCPs) in the presence of two competing phases. These phases near QCPs are assumed to be either classical or quantum and assumed to repulsively interact via square- square interaction. We find that for any dynamical exponents and for any dimensionality strong enough interaction renders QCPs unstable, and drive transitions to become first order. We propose that this instability and the onset of first order transition leads to spatially inhomogeneous states in practical materials near putative QCPs.

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