

## Thermal phase transition in a generic square lattice compass model

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We study the phase diagram of a model of two-component spins that interpolates between the XY model and the square lattice compass model, focusing on the phase transition out of the generic spin-lattice locked phase. Using both field theoretic arguments and Monte Carlo simulations, we find a line of critical points with continuously varying exponents which eventually turns weakly first order before connecting to the Ising nematic transition of the compass model. Generalizations to phase transitions in three dimensions versions of our model will also be discussed.