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Critical properties of the Kitaev-Heisenberg Model[1] YURIY SIZYUK, The Physics Department of UW Madsion, CRAIG PRICE, The Physics Department of Penn State University, NATALIA PERKINS, The Physics Department of UW Madsion — Collective behavior of local moments in Mott insulators in the presence of strong spin-orbit coupling is one of the most interesting questions in modern condensed matter physics. Here we study the finite temperature properties of the Kitaev-Heisenberg model which describe the interactions between the pseudospin $J = 1/2$ iridium moments on the honeycomb lattice. This model was suggested as a possible model to explain low-energy physics of AIr_2O_3 compounds. In our study we show that the Kitaev-Heisenberg model may be mapped into the six state clock model with an intermediate power-law phase at finite temperatures. In the framework of the Ginsburg-Landau theory, we provide an analysis of the critical properties of the finite-temperature ordering transitions.

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