Hysteresis loop area of the kinetic Ising model with next-nearest neighbor interaction WILLIAM BAEZ, TRINANJAN DATTA, CHRISTIAN POPPELIERS, Augusta State University — We investigate the effects of the next-nearest neighbor interaction on the hysteresis loop area of the two-dimensional kinetic Ising model subject to a time dependent magnetic field. For the nearest neighbor model it is known that the loop area, $A(H_o, f)$, has a dispersion relationship given by $A(H_o, f) \propto H_o^{2/3} f^{1/3}$ in the low frequency limit, $f \rightarrow 0$, where H_o is the external magnetic field amplitude. Using the Metropolis algorithm we explore the hysteresis dispersion in the low frequency limit for various external magnetic fields. We find that the hysteresis relationship changes, as compared to the nearest neighbor model, in the presence of next-nearest neighbor interaction.

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