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Sunil Chhita* (schhita@math.brown.edu), Mathematics Department, Box 1917, Brown University, Providence, RI 02906. *Particle Systems arising from an Anti-ferromagnetic Ising Model.*

We present a low temperature anisotropic anti-ferromagnetic 2D Ising model through the guise of a certain dimer model. This model has a bijection with a one-dimensional particle system equipped with creations and annihilations. We give the exact phase diagram, which determines two significant values - the independent and critical values. We also present some results for the behavior of the model in the scaling window. (Received January 03, 2011)