

Abstract Submitted  
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**Reentrant Berezinskii-Kosterlitz-Thouless Transitions in a Triangular Ising Thin Film** YOSHITOMO KAMIYA, SHI-ZENG LIN, GIA-WEI CHERN, CRISTIAN BATISTA, Los Alamos Natl Lab — We study the triangular lattice Ising model with a finite number of vertically stacked layers and demonstrate a low temperature reentrance of one or two Berezinskii-Kosterlitz-Thouless transitions, which results in an extended disordered regime down to  $T = 0$ . This regime exhibits a novel and peculiar low-temperature thermodynamics such as the enhanced short-range magnetic correlation as temperature is increased. Numerical results are complemented with the derivation of an effective dimer theory that quantitatively describes the low temperature physics. Qualitative features of the global phase diagram are obtained by mapping the classical spin model into the single-layer quantum Ising model. (Reference: Shi-Zeng Lin, Yoshitomo Kamiya, Gia-Wei Chern, and Cristian Batista, [arXiv:1310.3468](https://arxiv.org/abs/1310.3468))

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