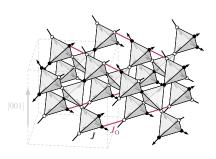
## Spin-Ice Thin Films: Large-N theory and Monte Carlo simulations

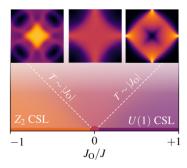
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Étienne Lantagne-Hurtubise<sup>1,2</sup>, Jeffrey G. Rau<sup>3</sup>, and Michel J. P. Gingras<sup>1,3</sup>

Minimal model for spin ice films: nearest-neighbor Ising exchange with inequivalent *orphan bonds* 

Main result:  $\mathit{U}(1)$  or  $\mathit{Z}_2$  classical spin liquids at low- $\mathit{T}$ 





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