

Abstract Submitted  
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**Monte Carlo study of a 2D diluted XY model with annealed disorder: stripes versus phase separation**<sup>1</sup> DANIEL VALDEZ-BALDERAS, DAVID STROUD, Department of Physics, Ohio State University — Using Monte Carlo simulations, we study the effect of introducing annealed disorder and a second nearest neighbor repulsion between spins on a two-dimensional site-diluted XY model. At low temperatures we observe that spins rearrange themselves in either blobs (phase separation) or stripes, depending on the strength of the second nearest neighbor repulsion. This rearrangement of spins results in a change on the low-temperature helicity modulus of systems with annealed disorder when compared to that of systems with quenched disorder. We have verified the relation between the zero temperature helicity of an XY model and the conductance of an associated resistor network.

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