Duality defects in two-dimensional statistical mechanics on the lattice DAVID AASEN, California Institute of Technology, ROGER MONG, University of Pittsburgh, PAUL FENDLEY, Oxford — We explore applications of topological defect lines in 2D statistical mechanics models on and off the critical point. In particular, we discuss an extension of Kramers-Wannier duality. The duality is implemented by a topological defect line that separates the model from its dual.Away from criticality, we explain how duality defects make it possible to find non-topological defects that localize a topological degree of freedom.In certain cases, this degree of freedom appears in the quantum spin chains as a zero mode.We will elucidate these results with a variety of concrete examples including the Ising, Fibonacci and super-symmetric models.

David Aasen
California Institute of Technology