Mirror Symmetry for Landau-Ginzburg Models

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A Landau-Ginzburg model is a triplet of data: a quasi-affine variety X with a (reductive or finite) group G acting on it, along with a G-invariant regular function $W : X \to \mathbb{C}$. Here, the geometry of a Landau-Ginzburg model is encoded in a mix of the geometry of the quotient stack $[X/G]$ and the singularity theory of W. While they may seem synthetic, they are often found as deformations of some of our favorite projective varieties. We will discuss the state of the art of their mirror symmetry along with some new results on open enumerative geometry for Landau-Ginzburg models found in joint work with Mark Gross (Cambridge) and Ran Tessler (Weizmann).