

Mirror symmetry and automorphisms

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I will speak about work in progress with Elana Kalashnikov and a previous work with her and Davide Cesare Veniani. It will illustrate the behavior of cohomological mirror symmetry in the presence of an automorphism operating on the two sides of a mirror pair of Calabi-Yaus constructed using the setup of Berglund and Hübsch. Some of the most striking statements we provide are cohomological invariants showing a mirror behaviour relating the fixed loci on the two sides (an interesting aspect is that clearly these are not Calabi-Yau orbifolds). The proof is also very simple and hopefully inspiring. It recasts important dualities through which mirror symmetry can be stated as an explicit automorphism. Namely, we use the crepant resolution conjecture relating cohomology of orbifolds and that of the resolutions of their coarse spaces, we rephrase it in terms of Landau-Ginzburg model, finally we obtain the desired statement from mirror symmetry of An singularities.