

1. ON HIKITA-NAKAJIMA CONJECTURE FOR QUIVER VARIETIES AND SLODOWY SLICES

Symplectic duality predicts that symplectic singularities should come in pairs. For example, Nakajima quiver varieties are conjecturally dual to BFN Coulomb branches (of the corresponding quiver theories). Another family of potentially symplectically dual pairs was described recently in the works of Losev, Mason-Brown, and Matvieievskiy: they describe symplectically duals to Slodowy slices to nilpotent orbits.

In this talk, we will discuss the Hikita-Nakajima conjecture that relates the geometry of symplectically dual varieties. It turns out that the conjecture is very likely to hold for quiver varieties (as was predicted by Nakajima) but does not quite hold for Slodowy slices and arbitrary Higgs branches. We will explain certain simplification of this conjecture that may work in general. We will discuss a possible approach toward the proof of this conjecture. The approach is highly based on the ideas of Bellamy, Braverman, Kamnitzer, Losev, Tingley, Webster, Weekes, Yacobi, and their co-authors.

We will illustrate the approach on the examples of ADHM space (for which Hikita-Nakajima conjecture is true as stated) and for certain Slodowy varieties.

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