

Symplectic Resolutions, Coulomb Branches, and 3d Mirror Symmetry (1/5)

lundi 5 juillet 2021 15:00 (1 heure)

In the 21st century, there has been a great interest in the study of symplectic resolutions, such as cotangent bundles of flag varieties, hypertoric varieties, quiver varieties, and affine Grassmannian slices. Mathematicians, especially Braden-Licata-Proudfoot-Webster, and physicists observed that these spaces come in dual pairs: this phenomenon is known as 3d mirror symmetry or symplectic duality. In physics, these dual pairs come from Higgs and Coulomb branches of 3d supersymmetric field theories. In a remarkable 2016 paper, Braverman-Finkelberg-Nakajima gave a mathematical definition of the Coulomb branch associated to a 3d gauge theory. We will discuss all these developments, as well as recent progress building on the work of BFN. We will particularly study the Coulomb branches associated to quiver gauge theories: these are known as generalized affine Grassmannian slices.

Summary

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