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BFN Springer theory

Given a representation of a reductive group, Braverman-Finkelberg-Nakajima have defined a remarkable Poisson variety called the Coulomb branch. Their construction of this space was motivated by considerations from supersymmetric gauge theories and symplectic duality. The coordinate ring of this Coulomb branch is defined as a kind of cohomological Hall algebra; thus it makes sense to develop a type of "Springer theory" to define modules over this algebra. In this talk, we will explain this BFN Springer theory and give many examples. In the toric case, we will see a beautiful combinatorics of polytopes. In the quiver case, we will see connections to the representations of quivers over power series rings. In the general case, we will explore the relation between these Springer fibres and quasimap spaces.