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Marsden-Weinstein reductions for representations of quivers

The cotangent bundle of the space of representations of a quiver has a natural moment map, and using it one can form Marsden-Weinstein reductions and other moduli spaces. Nakajima's quiver varieties are special cases of this construction.

In another language, these moduli spaces classify representations of certain algebras, the preprojective algebras and their deformations.

In these lectures I want to give a survey of what is known about deformed preprojective algebras and the general structure of the Marsden-Weinstein reductions.

As well as explaining the connection with quiver varieties, I will illustrate the lectures with examples and applications, in particular to Kleinian singularities and to problems about sums of matrices in prescribed conjugacy classes.