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Symplectic reduction and sheets

Let \mathfrak{g} be a finite-dimensional semisimple Lie algebra over \mathbb{C} . Given a non-negative integer k , one may consider the locus $\mathfrak{g}_k \subset \mathfrak{g}$ of elements with centralizer dimension equal to k . A locally closed subvariety of \mathfrak{g} is called a *sheet* if it is an irreducible component of \mathfrak{g}_k for some non-negative integer k . These subvarieties are ubiquitous in Lie-theoretic Poisson geometry.

I will give an overview of sheets and their incarnations in Poisson geometry and representation theory. This will lead to a description of ongoing work with Maxence Mayrand, in which we consider symplectic reduction along a sheet.