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Connectivity and Convexity Properties of the Moment Map for Group Actions on Hilbert Manifolds

Thirty years ago a landmark convexity result was obtained by Atiyah (and independently Guillemin and Sternberg): the image of the moment map for a torus action on a compact symplectic manifold is a convex polyhedron.

In this talk we present an infinite-dimensional analogue to this result. In particular, we will examine Hilbert manifolds equipped with a strongly symplectic structure and a finite-dimensional group action preserving the symplectic structure. We discuss connectedness of a generic set of regular level sets of the moment map in this generality. This is used to prove convexity of the image of the moment map.