

Geometry & Topology Seminar

2015/09/24 Jeremy Lane

Title: Convexity and the Thimm Trick

Abstract: In 1981, Thimm provided a technique for integrating G -invariant Hamiltonians on Hamiltonian G -spaces by combining twisted torus actions coming from the Lie algebra structure of G . This technique is quite general and has been used to construct various important examples of completely integrable torus actions in the literature such as Gelfand-Zeitlin systems on coadjoint orbits, and bending flows in polygon space. In each of these examples, one can prove that the image of the moment map is convex and its fibres are connected, but the proof techniques are ad hoc.

In this talk we show that a general a convexity and fibre-connectedness theorem holds for moment maps of Hamiltonian torus actions constructed by the Thimm trick. This result may be viewed as a generalization of Kirwan's non-abelian convexity theorem.