



UtahState
University

Pure Mathematics Seminar

September 22, 2022

3:30pm-5:30pm in ANSC 314

Speaker: Peter Crooks (Utah State University)

Title: Gelfand-Cetlin abelianizations of symplectic quotients

Abstract: Symplectic geometry is perhaps best described as an abstraction of classical mechanics into the realm of pure mathematics. On the other hand, it is a recurring theme in pure math that the symmetries of an object should give rise to "quotients" of that object. Marsden-Weinstein reduction is the most fundamental incarnation of this phenomenon in symplectic geometry; it is a systematic approach to taking quotients of symplectic manifolds carrying Hamiltonian symmetries, and has important manifestations in algebraic geometry, mathematical physics, and representation theory.

I will begin with a broad overview of the themes mentioned above. Attention will subsequently turn to some recent research on "abelianizing" the symplectic quotients taken by any compact connected Lie group. One main ingredient will be the Gelfand-Cetlin integrable systems of Guillemin-Sternberg, as well as recent generalizations to arbitrary Lie type by Hoffman-Lane. This represents joint work with Jonathan Weitsman.