

1154-34-1081 **Anthony M Bloch*** (abloch@umich.edu), Department of Mathematics, University of Michigan, Ann Arbor, MI 48109, and **Francois Gay-Balmaz** and **Tudor S Ratiu**. *Classical integrable Hamiltonian systems, Poisson structures and some generalizations.*

In this talk we discuss a geometric approach to some classical integrable Hamiltonian systems and their generalizations. The theory is motivated by some ideas in optimal control theory. The integrable systems discussed include the rigid body equations, geodesic flows on the ellipsoid, flows on Stiefel manifolds, and the Toda lattice flows. We discuss the Hamiltonian structure of these systems, relate our work to some work of Moser and discuss some generalizations. This is mainly joint work with Francois Gay Balmaz and Tudor Ratiu. (Received September 13, 2019)