1052-53-240   **Jedrzej Sniatycki*** (`sniat@math.ucalgary.ca`), Department of Mathemtics and Statistics, University of Calgary, Calgary, Alberta T2N 1N4, Canada. *Singular Reduction of Symmetries.*

Presence of symmetries in Hamiltonian systems simplifies the task of solving equations of motion. If the action of the symmetry group G on a symplectic manifold (P, ω) is free and proper the space P/G of G-orbits in P is a Poisson manifold and the orbit map $\rho : P \to P/G$ is a locally trival fibration.

If the action of G on P is proper but not free, the orbit space P/G is not a manifold but a smoothly stratified space. One can recover all the structure of P/G from the structure of the ring $C^\infty(P)^G$ of smooth G-invariant functions on P.

This approach is also applicable to other types of systems, e.g. dynamical systems with non-holonomic constraints, non-linear control systems or Dirac systems.