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Dusa McDuff* (dusa@math.sunysb.edu), Department of Mathematics, Stony Brook University, Stony Brook, NY 11794-3651. *Homotopy properties of Hamiltonian group actions.*

A compact symplectic manifold (M, ω) possesses a very interesting group of structure preserving diffeomorphisms. When M is simply connected, the identity component of this group consists of Hamiltonian isotopies (each generated by a time dependent function on the manifold) and so is called the Hamiltonian group $Ham(M)$. Though this group is infinite dimensional, it is significantly smaller than the full group of diffeomorphisms of M and hence it sometimes possible to understand its homotopy and homology groups. Symplectic geometers have been interested for a long time in compact Lie subgroups G of Ham, since they correspond to Hamiltonian group actions. In recent work with Kedra SG/0404539 and Tolman SG/0404338, SG/0503467, I have been studying the homotopy properties of such subgroups G of $Symp$ – for example, when is the induced map on the fundamental group π_1 an injection? This talk will describe some results about this and other related questions. Some of the results are proved using completely elementary methods (for example, the existence of various characteristic classes and homomorphisms), though others use more sophisticated analytic tools. (Received March 07, 2005)