

Persistence of stationary motion under explicit symmetry breaking perturbation

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Abstract:

Explicit symmetry breaking occurs when a dynamical system having a certain group of symmetries is perturbed in a way that the perturbation conserves only some symmetries of the original system. Simple examples include perturbing the rotational motion of small molecules by adding a weak magnetic field or perturbing a symmetric heavy top to one that is not symmetric. We give a geometric approach to study this phenomenon in the setting of equivariant Hamiltonian systems. A lower bound for the number of orbits of equilibria and orbits of relative equilibria that will persist after a small perturbation is given. This work is in collaboration with James Montaldi.

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