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Symmetric bifurcations of relative equilibria and isotropy for an X_2Y molecule

The construction of structure-preserving tubular neighborhoods for Hamiltonian Lie group actions facilitates the study of bifurcating branches of relative equilibria near states with non-trivial isotropy. In this talk we explore how the so-called bundle equations provide a systematic study of this bifurcation problem using the lattice of isotropy subgroups. We illustrate this method discussing persistence and bifurcations of relative equilibria in X_2Y molecules. Here one takes advantage of the fact that the phase space is a cotangent bundle. We will also touch on questions about stability. (Joint work with Miguel Rodríguez-Olmos and Cristina Stoica.)