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Equivariant KAM Theorem

Kolmogorov-Arnold-Moser (KAM) theory has a rich and well developed history. In this talk we present a KAM theory for Γ -equivariant Hamiltonian systems. Hamiltonian systems with discrete symmetry groups Γ arise naturally in many settings including for instances the N -body problem. If Γ is Abelian, then KAM theorem applies, but for Γ non-Abelian, $1 : 1$ resonance effects lead to small divisor problems. These problems can be overcome by combining the isotypic decomposition of phase space with a detailed study of Γ and Torus invariants, all within the classical iterative proof structure. This is joint work with Dr. Luciano Buono.