Computation of invariant tori in close-to-degenerate Hamiltonian systems

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Motivated by Celestial Mechanics problems, in this talk we present methods for computing invariant tori in close-to-degenerate Hamiltonian systems. In particular, we present quasi-Newton methods for the invariance equation of the torus parameterization, leading to proofs of new KAM results, numerical algorithms, and computer-assisted proofs.

Joint work with Jordi-Lluís Figueras (Uppsala University, Sweden).