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Title: Quantum ergodicity and symmetry reduction

Abstract: We study the ergodic properties of eigenfunctions of Schr$\sqrt{\ }$ ∂ dinger operators on a closed connected Riemannian manifold in case that the underlying Hamiltonian system possesses certain symmetries, relying on recent results on singular equivariant asymptotics. More precisely, we prove an equivariant quantum ergodicity theorem assuming that the symmetry-reduced Hamiltonian flow on the principal stratum of the singular symplectic reduction is ergodic by deducing an equivariant version of the semiclassical Weyl law. The theorem then implies an equivariant version of the Shnirelman-Zelditch-Colin-de-Verdiere theorem. The guiding idea is that symmetries imply the existence of conserved quantitites and partial integrability of the Hamiltonian flow, forcing the system to behave less chaotically. By dividing out the symmetries, one is able to study the symmetry-reduced ergodic properties of the corresponding quantum system.