

Regularity of Eigenstates in Regular Mourre-Theory

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Abstract

Our presentation gives an abstract method for proving that eigenstates of a self-adjoint operator H lie in the domain of the conjugate operator A . Conjugation means here that A and H have a positive commutator in the sense of Mourre. The only requirement is the (local) C^k -regularity of H . Regarding integer k , our result is optimal. Using this method, we obtain cutoff-independent bounds and under a boundedness assumption of the multiple commutators of H with A , we prove analyticity of the eigenstates with respect to e^{-itA}