

Virtual levels and the limiting absorption principle

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Abstract

The virtual levels admit several equivalent definitions:

- (1) These are the points of the essential spectrum with the corresponding "virtual states" from L^2 or from the space which is *slightly weaker* than L^2 ;
- (2) There is no limiting absorption principle in the vicinity of these points;
- (3) There is a bifurcation of eigenvalues from these points under a certain perturbation which could be arbitrarily small.

We prove the equivalence of these definitions and study properties of corresponding virtual states. The approach applies to an arbitrary dimension and to non-selfadjoint operators. We give applications to the Schrödinger operator and – if time permits – to the massive and massless Dirac operators.