SEMICLASSICAL PSEUDOMODES OF SCHRÖDINGER OPERATORS WITH DISCONTINUOUS POTENTIALS

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For smooth potentials there exists a quite general theory on the construction of semiclassical pseudomodes, see [DSZ04].

Open problem: Can the technique be adapted to discontinuous potentials?

In my joint paper with Henry [HK15] we have a non-trivial pseudospectrum in a toy model (complex Heaviside-type potential). However, our technique is restricted to the particular situation and the non-trivial pseudospectrum is rather generated by the behavior of the potential at infinity.

References

[DSZ04] N. Dencker, J. Sjöstrand, and M. Zworski. Pseudospectra of semiclassical (pseudo-) differential operators. *Commun. Pure Appl. Math.*, 57:384–415, 2004.

[HK15] R. Henry and D. Krejčiřík. Pseudospectra of the Schroedinger operator with a discontinuous complex potential. arXiv: 1503.02478, 2015.

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