

SEMICLASSICAL RESONANCES GENERATED BY CROSSINGS OF CLASSICAL TRAJECTORIES

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It is well-known that (scalar) Schrödinger operators do not have resonances near a non-trapping energy of the underlying classical mechanics (shown by Helffer-Sjöstrand (1986) for analytic potentials, Martinez (2002) for smooth potentials). However, we found that systems of Schrödinger operators create resonances near a non-trapping energy when a closed directed cycle is composed by a couple of non-trapping trajectories. We give an example of such resonances for a system appearing in the Born-Oppenheimer approximation of polyatomic molecules, and describe their precise asymptotic distribution in the semiclassical limit in terms of the geometry of such directed cycles.

REFERENCES

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