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# Entropic bounds on semiclassical measures for quantized one-dimensional maps

Boris Gutkin  
*Fachbereich Physik*  
*Universität Duisburg-Essen*  
*Lotharstrasse 1*  
*47048 Duisburg*  
*GERMANY*

`boris.gutkin@uni-duisburg-essen.de`

## Abstract

Quantum ergodicity asserts that almost all infinite sequences of eigenstates of quantized ergodic Hamiltonian systems are equidistributed in the phase space. This, however, does not prohibit existence of exceptional sequences which might converge to different (non-Liouville) classical invariant measures. It has been recently shown by N. Anantharaman and S. Nonnenmacher (math-ph/0610019), that for Anosov geodesic flows the metric entropy of any semiclassical measure must satisfy a certain lower bound. This remarkable result seems to be optimal for uniformly expanding systems, but not in general case, where a stronger bound has been conjectured by the same authors. In the present work we consider such entropic bounds using the model of quantized one-dimensional maps. For a certain class of non-uniformly expanding maps we prove the conjecture of Anantharaman–Nonnenmacher. Furthermore, for these maps we are able to construct some explicit sequences of eigenstates which saturate the bound. This demonstrates that the conjectured bound is actually optimal.