

Billiards with semi-rigid walls, asymptotic eigenfunctions of the 2D operator $\nabla D(x)\nabla$, and trapped coastal waves

V.E. Nazaikinskii

Ishlinsky Institute for Problems in Mechanics of the Russian Academy of Sciences,
Moscow, Russia;

Moscow Institute of Physics and Technology (State University), Dolgoprudny,
Moscow Oblast, Russia

e-mail: nazaikinskii@yandex.ru

Abstract. We construct asymptotic eigenfunctions of the two-dimensional operator $\hat{L} = \nabla D(x)\nabla$ in a domain Ω with coefficient $D(x)$ degenerating on the boundary $\partial\Omega$. These eigenfunctions are associated with Liouville tori of integrable geodesic flows with a metric degenerating on $\partial\Omega$. Such geodesic flows can be called "billiards with semi-rigid walls."

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