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Title: Lower bounds for eigenfunction restrictions in lacunary regions

Abstract: Let (M, g) be a compact, real-analytic Riemannian manifold and $u_h \in C^\omega(M)$ be a sequence of L^2-normalized Laplace eigenfunctions with $(-h^2\Delta_g - 1)u_h = 0$. We assume that this sequence has a localized defect measure $d\mu$ in the sense that

$$\operatorname{supp} \pi_* d\mu = K, \quad M \setminus K \neq \emptyset.$$

Using Carleman estimates in the lacunary region $M \setminus K$, we show that for any separating hypersurface $H \subset (M \setminus K)$ sufficiently close to ∂K, there exist constants $h_0(H), C_H > 0$ such that for $h \in (0, h_0(H)]$,

$$\int_H |u_h|^2 d\sigma_H \geq e^{-C_H/h}.$$

Consequently, In the terminology of Toth and Zelditch, all such hypersufaces are *good* for the eigenfunction sequence $\{u_h\}$. This is joint work with Yaiza Canzani.