

Existence of minimizers for the Reifenberg Plateau problem

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Abstract. Given a compact set $B \subset \mathbb{R}^n$ and a subgroup L of the Čech homology group $\check{H}_{d-1}(B; G)$ of dimension $d - 1$ over some Abelian group G , we find a compact set $E \supset B$ such that the image of L by the natural map $\check{H}_{d-1}(B; G) \rightarrow \check{H}_{d-1}(E; G)$ induced by the inclusion $B \rightarrow E$, is reduced to $\{0\}$, and such that the Hausdorff measure $\mathcal{H}^d(E \setminus B)$ is minimal under these constraints. Thus we have no restriction on the group G or the dimensions $0 < d < n$. We can also replace the Hausdorff measure with the integral of a special integrand.

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