

Free Boundary Problems in PDEs and Related Issues

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Título: Existence and regularity for an optimal partition problem with volume and inclusion constraints.

Resumo: We study the existence and regularity of optimal partitions for a problem with volume and inclusion constraints. In particular, we prove that an optimal partition is connected and the eigenfunction associated with each set is locally Lipschitz continuous, which implies that the optimal sets are at least open sets. We show that there is a variational formulation to our problem that does not involve subsets, only functions, and we prove the desired properties for the minimizers.