THE FIRST EIGENVALUE OF FRACTIONAL DIRICHLET-LAPLACIAN FOR PLANAR SETS WITH TOPOLOGICAL CONSTRAINTS

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ABSTRACT. We consider the first eigenvalue of the fractional Dirichlet-Laplacian $(-\Delta)^s$ and we show a lower bound in terms of the inradius of the set for certain values of s. In particular, we prove such an estimate for the class of planar sets with a fixed number k of "holes". We also discuss the optimality (in some sense) of its dependence with respect to the parameters s and k.

Some of the results presented are obtained in collaboration with Lorenzo Brasco (University of Ferrara).

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