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Besicovitch's $1/2$ problem

Besicovitch's problem

Besicovitch's problem investigates the smallest threshold guaranteeing rectifiability for a set with Hausdorff n -dimensional finite measure when the lower density of the set is larger than almost everywhere. Besicovitch conjectured that (hence the name of the problem) and proved $1/2$, then Preiss and Tišer improved the bound to $1/4$. In a recent work in collaboration with C. De Lellis, F. Glaudo and D. Vittone, we devise a strategy to improve the bound by means of a hierarchy of variational problems and we reach a proof that $1/2$. In this seminar, I will try to explain the fairly intuitive geometric idea behind this strategy and I will try to summarize both the computational obstacles and the intrinsic obstacles that are still in the way.

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