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An improved bound on the Hausdorff dimension of Besicovitch sets in $\mathbb{R}^3$

A Besicovitch set is a compact set in $\mathbb{R}^d$ that contains a unit line segment pointing in every direction. The Kakeya conjecture asserts that every Besicovitch set in $\mathbb{R}^d$ must have Hausdorff dimension d. I will discuss a recent improvement on the Kakeya conjecture in three dimensions, which says that every Besicovitch set in $\mathbb{R}^3$ must have Hausdorff dimension at least $5/2 + \epsilon$, where ϵ is a small positive constant. This is joint work with Nets Katz.