

STICKY KAKEYA SETS IN \mathbb{R}^3

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A Kakeya set is a set of points in \mathbb{R}^n which contains a unit line segment in every direction. The Kakeya conjecture states that the dimension of any Kakeya set is n . This conjecture remains wide open for all $n \geq 3$.

Together with Josh Zahl, we study a special collection of the Kakeya sets, namely the sticky Kakeya sets, where the line segments in nearby directions stay close. We prove that sticky Kakeya sets in \mathbb{R}^3 have dimension 3. In the talk, we will also discuss the connection to projection theory in geometric measure theory.