

1030-42-262

Michael Bateman* (mdbatema@indiana.edu), Indiana University, Department of Mathematics, Rawles Hall, 831 East 3rd St, Bloomington, IN 47405. *Keakeya Sets and Directional Maximal Operators in the Plane.*

We discuss the "splitting number" of a tree and use it to categorize sets of directions. We then construct somewhat exotic collections of rectangles, all of which point in a certain set of directions. (For example, the set could be $[0, 1]$, the Cantor set, or $\{\frac{1}{n}\}_{n=1}^{\infty}$.) Finally, we discuss how these constructions allow us to classify the sets of directions that give rise to a bounded directional maximal operator. (Received August 05, 2007)