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Patrick R. LaVictoire* (patlavic@math.berkeley.edu), UC Berkeley Department of Mathematics, 970 Evans Hall #3840, Berkeley, CA 94720. *Pointwise Divergence of L^1 Ergodic Averages Along the N th Powers.*

Within the subject of ergodic subsequence averages $\frac{1}{N} \sum_{k=1}^N f(T^{a(k)}x)$, the question of pointwise convergence for $f \in L^1$ has turned out to be even more intricate than questions of norm convergence or even pointwise convergence for L^2 functions. As shown by Buczolich and Mauldin for the sequence of squares, a concentration of the sequence in residue classes can thwart an L^1 maximal inequality and the corresponding ergodic theorem. In this talk, we will explain the construction behind this result and generalize it to encompass sequences like the n th powers and the primes. (Received September 21, 2009)