
Zbl 228.10035

Erdős, Paul; Ulam, S.

Some probabilistic remarks on Fermat's last theorem. (In English)

Rocky Mountain J. Math. 1, 613-616 (1971).

Define a measure in the space of all sequences of integers. Let the measure of the set of sequences containing n have measure $n^{-\alpha}$. It is easy to see then that for all sequences neglecting a set of sequences of measure 0, $\lim_{k=\infty} a_k/k^{1/(1-\alpha)} = c$. The authors show that for $\alpha > \frac{2}{3}$ with probability one the equation $a_i + a_j = a_r$ has only a boundednumber of solutions but for $\alpha \leq \frac{2}{3}$ it has with probability one infinitely many solutions [cf. *H.Halberstam* and *K.F.Roth*, Sequences. Vol. I. (1966; Zbl 141.04405)]. Thus speaking very heuristically for $k > 3$ Fermat's last theorem is true with probability one.

Classification:
11D41 Higher degree diophantine equations
11N37 Asymptotic results on arithmetic functions