FULL DIMENSION OF BERNOULLI CONVOLUTIONS

PETER VARJU

Fix a number $0 < \lambda < 1$ and denote by ν_λ the stationary probability measure under the maps $x \to \lambda x + 1$ and $x \to \lambda x - 1$. This measure is called the Bernoulli convolution with parameter λ. It is a long standing open problem to determine the set of parameters λ for which ν_λ is absolutely continuous. I will discuss recent progress on this problem focusing on a joint work with Emmanuel Breuillard, which proves that if Lehmer's conjecture holds, then there is a number $a < 1$ such that $\dim \nu_\lambda = 1$ for all $\lambda \in [a, 1)$. Unconditionally, we prove that $\dim \nu_\lambda = 1$ for some explicit examples of transcendental numbers λ such as $\ln(2)$ and $\pi/4$.