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Large fluctuations of random multiplicative functions

Random multiplicative functions $f(n)$ are a well studied random model for deterministic multiplicative functions like Dirichlet characters or the Mobius function. Arguably the first question ever studied about them, by Wintner in 1944, was to obtain almost sure bounds for the largest fluctuations of their partial sums $\sum_{n \leq x} f(n)$, seeking to emulate the classical Law of the Iterated Logarithm for independent random variables. It remains an open question to sharply determine the size of these fluctuations, and in this talk I will describe a new result in that direction.