Orthogonality properties for a family of μ-functions

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Abstract

The *Möbius randomness law* is a well-known but vague principle concerning the orthogonality of the Möbius function $\mu(n)$ with any "reasonable" sequence $\xi(n)$. In particular is expected that

$$\sum_{n\leq N} \mu(n)\xi(n) = o\,(N)$$

for every sequence $\xi(n)$ satisfying suitable hypotheses.
After recalling some basic facts in the context of the Sarnak Conjecture we discuss the possibility to extend some classical and recent results to a new family of arithmetic functions strictly related to $\mu(n)$.