

1139-37-86

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Nilsequences and multiple correlations along subsequences.

Let (X, μ, T) be a measure preserving system and f a bounded function on X . The sequence $a(n) = \int f \cdot T^n f \dots T^{kn} f d\mu$ is called a multiple correlation sequence. By the works of Bergelson, Host, Kra and Leibman, a multiple correlation sequence can be decomposed into a sum of a nilsequence (a sequence defined by evaluating a continuous function along an orbit in a nilsystem) and a nullsequence (a sequence that is zero in uniform density). In this talk, we present a refinement of that result by showing the nullsequence is null along primes, along integer polynomials and Hardy field sequence $[n^c]$. (Received January 31, 2018)