

The Riemann zeta distribution on integers

Michael Cranston
(U California Irvine)

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Abstract

We examine statistical properties of integers when they are sampled using the Riemann zeta distribution and compare them to similar properties when they are sampled according to "uniform" or harmonic distributions. For example, as the variable in the Riemann zeta function approaches 1, a central limit theorem originally due to Erdos and Kac for the distinct number of prime factors for the sampled integer can be readily derived. These results can then be deduced for the uniform distribution on integers via a Tauberian Theorem. Similar results can be applied to sampling polynomial over finite fields.



TU Berlin
Institut für Mathematik
Straße des 17. Juni 136
10623 Berlin
MA 041