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Discrepancy bounds for the distribution of the Riemann zeta function

In 1930 Bohr and Jessen proved that for any $1/2 < \sigma \leq 1$, $\log \zeta(\sigma + it)$ has a continuous limiting distribution in the complex plane. As a consequence, it follows that the set of values of $\log \zeta(\sigma + it)$ is everywhere dense in $\mathbb{C}$. Harman and Matsumoto obtained a quantitative version of the Bohr-Jessen Theorem using Fourier analysis on a multidimensional torus. In this talk, we shall present a different approach which leads to uniform discrepancy bounds for the distribution of $\log \zeta(\sigma + it)$ that improve the Harman-Matsumoto estimates. The new method is based on computing certain complex moments of $\zeta(\sigma + it)$. This is a joint work with Steve Lester and Maksym Radziwill.