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*An Effective Log-Free Zero Density Estimate for Automorphic
L-functions and the Sato-Tate Conjecture*

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Abstract: The classical techniques used to put primes in intervals of the form $[x, 2x]$ are insufficient to put primes in intervals of the form $[x, x + x^{1-\delta}]$ for any $\delta > 0$, or to find the least prime in an arithmetic progression $a \pmod q$. Such problems are easily answered assuming the Generalized Riemann Hypothesis, but they can be answered unconditionally using very detailed information about the location and density of zeros of Dirichlet L -functions in regions of the critical strip. We will discuss effective results on the distribution of general automorphic L -functions in the critical strip and use these distribution results to study generalizations of the aforementioned problems in the context of the Sato-Tate Conjecture.

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MATHEMATICS AND COMPUTER SCIENCE
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