

1173-11-92

Jonathan W. Bober, Zhenchao Ge and Micah B. Milinovich* (mbmilino@olemiss.edu),

Department of Mathematics, 304 Hume Hall, University of Mississippi, University, MS 38677.

Biases in the gaps between zeros of Dirichlet L -functions. Preliminary report.

We describe an infinite family of Dirichlet L -functions which have an irregular and perhaps unexpected behavior in their value distribution. This behavior has an arithmetic explanation and corresponds to the non-vanishing of a certain Gauss type sum. We give a complete classification of the characters for when these sums are nonzero and count the number of corresponding characters. It turns out that this Gauss type sum vanishes for 100% of primitive Dirichlet characters but there is an infinite (but zero density) subfamily of characters where the sum is nonzero. Experimentally, this thin family of Dirichlet L -functions seems to have a significant, surprising, and previously undetected bias in distribution of gaps between the zeros. (Received September 16, 2021)