1086-11-1836 **Daniel Fiorilli*** (fiorilli@umich.edu), Department of Mathematics, University of Michigan, 530 Church Street, Ann Arbor, MI 48109, and **Steven J Miller** (steven.j.miller@williams.edu), Williams College, 202 Bronfman Science Center, Williamstown, MA 01267. *Surpassing the Ratios Conjecture in the 1-level density of Dirichlet L-functions.*

It is widely believed that low-lying zeros of the family of all Dirichlet L-functions modulo q are distributed like eigenvalues of large unitary matrices in the q limit. However, there are lower-order terms appearing in the 1-level density of these zeros, and these terms are not predicted by random matrix theory. One can make predictions for these lower-order terms using the ratios conjecture of Conrey, Farmer and Zirnbauer, up to an error of $q^{-1/2+\epsilon}$. We will show that when restricting the support of the test function to $(-3/2, 3/2)$ and when considering Dirichlet L-functions modulo q with $Q < q \leq 2Q$, not only can we prove the ratios conjecture's prediction, but we can actually find a new lower-order term of order $Q^{-1/2}/\log Q$. The proof relies on the fact that there are less primes congruent to 1 modulo q than to 6 modulo q, on average over q. (Received September 24, 2012)