1096-VO-1548 **Alan Chang*** (acsix@math.princeton.edu), Department of Mathematics, Fine Hall, Washington Road, Princeton, NJ 08544, and **Steven J Miller** (steven.j.miller@williams.edu) and **Julio Andrade** (julio_cesar_bueno_de-andrade@brown.edu). *Newman's Conjecture in Various Settings.*

Polya introduced a deformation of the Riemann zeta function $\zeta(s)$, and De Bruijn and Newman found a real constant Λ which encodes the movement of the zeros of $\zeta(s)$ under the deformation. The Riemann hypothesis is equivalent to $\Lambda \leq 0$. Newman made the conjecture that $\Lambda \geq 0$ along with the remark that "the new conjecture is a quantitative version of the dictum that the Riemann hypothesis, if true, is only barely so."

Newman's conjecture is still unsolved, and previous work could only handle the Riemann zeta function and quadratic Dirichlet L-functions, obtaining lower bounds very close to zero (for example, for $\zeta(s)$ the bound is at least $-1.14541 \cdot 10^{-11}$). We generalize the techniques to apply to a wider class of L-functions, including automorphic L-functions as well as function field L-functions.

Each type of "family" of function field quadratic L-functions gives a different version of Newman's conjecture. These variations have connections to other fields, including random matrix theory and the Sato–Tate conjecture. In particular, the recent proof of Sato–Tate for elliptic curves over totally real fields allows us to prove a version of Newman's conjecture involving fixed $D \in \mathbb{Z}[T]$ of degree 3. (Received September 16, 2013)