Exposé court

28 *The density hypothesis for the L-functions associated to holomorphic cusp forms and zero–density estimate for the Riemann zeta function*

Chen, Bin (Department of Mathematics, Ghent University, Belgium)

We study the range of validity of the density hypothesis for the zeros of the L-functions associated to holomorphic cusp form f and prove that $N_f(\sigma,T) \ll T^{2(1-\sigma)+\varepsilon}$, for $\sigma \geq 51/58$. It improves the previous result of Ivić, replacing $51/58$ by $53/60$. In addition, we study zero-density estimate of the Riemann zeta function and show that $N(\sigma,T) \ll T^{\frac{24(1-\sigma)}{30\sigma-11}+\varepsilon}$ for $279/314 \leq \sigma \leq 17/18$. This improves on Ivić's condition $155/174 \leq \sigma \leq 17/18$. Our results rely on an improvement of the large values estimates for Dirichlet polynomials based on mixed moments estimates for the Riemann zeta function.