Mathematics > Complex Variables

Equidistribution of zeros of holomorphic sections in the non compact setting

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We consider N-tensor powers of a positive Hermitian line bundle L over a non-compact complex manifold X. In the compact case, B. Shiffman and S. Zelditch proved that the zeros of random sections become asymptotically uniformly distributed with respect to the natural measure coming from the curvature of L, as N tends to infinity. Under certain boundedness assumptions on the curvature of the canonical line bundle of X and on the Chern form of L we prove a non-compact version of this result. We give various applications, including the limiting distribution of zeros of cusp forms with respect to the principal congruence subgroups of SL2(Z) and to the hyperbolic measure, the higher dimensional case of arithmetic quotients and the case of orthogonal polynomials with weights at infinity. We also give estimates for the speed of convergence of the currents of integration on the zero-divisors.

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