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The distribution of Weierstrass points on a compact Riemann surface. (English)

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The following beautiful result is proved: Let C be a compact Riemann surface of genus $g \geq 2$ and let $h: \quad C \to \mathbb{R}$ be a continuous, real valued function. Denote by J_{g-1+n} the jacobian of line bundles of degree $g-1+n$ on C. Define a function $Av^n h$ on J_{g-1+n} by the following formula:

$$(Av^n h)(z) = \frac{1}{gn^2} \sum_{x \quad a \quad Weierstrass \quad point \quad of \quad z} h(x).$$

Then as $n \to \infty$, the $Av^n h$ converge uniformly to the constant function $\int_C hdb$ where b is the Bergman measure on C.

The result strengthtens an unpublished result of D. Mumford which states that if L is a line bundle on C of positive degree, then the Cesaro limit $Lim_{m\to\infty}(Av^* h)(L^n) = \int_C hdb$. The author's proof is elegant and uses, in addition to the method of Mumford, several new and interesting techniques like studying $Av^n h$ via its Fourier coefficients and estimating high derivatives of the same function by pulling translation invariant vector fields back to the product of C with the theta divisor.

Reviewer: D.Laksov

MSC:

14H55 Riemann surfaces; Weierstrass points; gap sequences
14H40 Jacobians, Prym varieties
30F10 Compact Riemann surfaces and uniformization

Cited in **13** Documents

Keywords:

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