CHRISTOFFEL FUNCTIONS ON JORDAN CURVES WITH RESPECT TO MEASURES WITH JUMP SINGULARITY

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Let μ be a finite Borel measure on the complex plane with compact support. The n-th Christoffel function is defined by

$$\lambda_n(\mu, z) = \inf_{\deg(P_n) \le n} \int \frac{|P_n(w)|^2}{|P_n(z)|^2} d\mu(w),$$

where the infimum is taken for all polynomials P_n such that $\deg(P_n) \le n$. In this talk we study the asymptotic behaviour of Christoffel functions for a class of measures. Assume that μ belongs to the **Reg** class and its support is some Jordan curve γ. Let $z_0 \in \gamma$ and assume μ is absolutely continuous in a neighborhood of z_0 with respect to the arc length measure s_J. We show that if $d\mu(z) = w(z)ds_J(z)$, where w has a jump singularity at z_0 with left and right limits A and B, then we have

$$\lim_{n \to \infty} n\lambda_n(z_0, \mu) = \frac{ds_J(z_0)}{d\omega_\gamma} \frac{A - B}{\log A - \log B},$$

where ω_γ denotes the equilibrium measure with respect to γ. We also show that this limit can be written in terms of Green's functions.

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