

Schwarz-Pick inequalities for hyperbolic domains in the extended plane

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Abstract

Let Ω and Π be two hyperbolic simply connected domains in the extended complex plane $C = C \cup \{\infty\}$. We derive sharp upper bounds for the modulus of the n th derivative of a holomorphic, resp. meromorphic function $f: \Omega \rightarrow \Pi$ at a point $z_0 \in \Omega$. The bounds depend on the densities λ_Ω and λ_Π of the Poincaré metrics and on the hyperbolic distances of the points z_0 and $f(z_0)$ to the point ∞ .

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Keywords

Derivatives, Holomorphic function, Hyperbolic distance, Poincaré metric