MAPPINGS OF FINITE DISTORTION: FORMATION OF CUSPS

Pekka Koskela and Juhani Takkinen

Abstract

In this paper we consider the extensions of quasiconformal mappings $f\colon B \to \Omega_s$ to the whole plane, when the domain Ω_s is a domain with a cusp of degree $s > 0$ and thus not an quasidisc. While these mappings do not have quasiconformal extensions, they may have extensions that are homeomorphic mappings of finite distortion with an exponentially integrable distortion, but in such a case $\int_{2B} \exp(\lambda K(x))\, dx = \infty$ for all $\lambda > 1/s$. Conversely, for a given $s > 0$ such a mapping is constructed with $\int_{2B} \exp(\lambda K(x))\, dx < \infty$ for all $\lambda < 1/s$.