

MAPPINGS OF FINITE DISTORTION: FORMATION OF CUSPS

PEKKA KOSKELA AND JUHANI TAKKINEN

Abstract

In this paper we consider the extensions of quasiconformal mappings $f: B \rightarrow \Omega_s$ to the whole plane, when the domain Ω_s is a domain with a cusp of degree $s > 0$ and thus not a 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 $\lambda < 1/s$.

2000 *Mathematics Subject Classification.* 30C60, 30C62.

Key words. Cusp, mappings of finite distortion, quasiconformal, quasidisc.

Juhani Takkinen was partially supported by the foundation Vilho, Yrjö ja Kalle Väisälän rahasto.