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Abstracts of Short Communications and Posters

Section:

8. Analysis

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Smoothness of quasiconformal mappings at a point
A plane quasiconformal mapping is a homeomorphic solution of the Beltrami equation $f_{\bar{z}} = \mu f_z$. The classical TeichmullerBelinski theorem asserts that f has a finite complex derivative at $z = 0$ if μ vanishes at 0 in a sense. The only known proof of the theorem admits no modification or refinement.
We present a new proof, providing sharp estimates for the remainder term as well as generalizations of the theorem to higher orders of smoothness.
As an application, one can obtain a sharp criterion for the existence of the second derivative or a version of the Warschawski asymptotic formula with remainder term.
As another application, we present a new proof of the recent Tkachenko result on spectra of Hill operators.