

Accepted Manuscript

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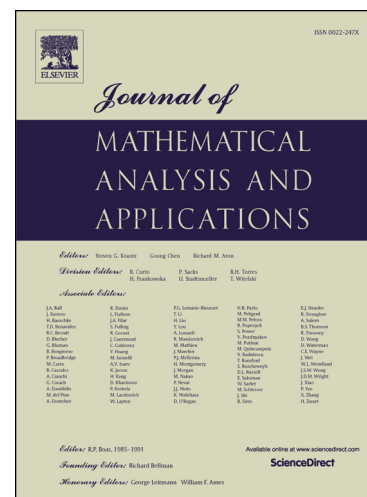
PII: S0022-247X(18)30386-X
DOI: <https://doi.org/10.1016/j.jmaa.2018.04.078>
Reference: YJMAA 22233

To appear in: *Journal of Mathematical Analysis and Applications*

Received date: 10 January 2018

Please cite this article in press as: Z. Li, Y. Li, A note on Hamilton sequences of extremal Beltrami differentials, *J. Math. Anal. Appl.* (2018), <https://doi.org/10.1016/j.jmaa.2018.04.078>

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A NOTE ON HAMILTON SEQUENCES OF EXTREMAL BELTRAMI DIFFERENTIALS

ZHONG LI AND YEZHOU LI

ABSTRACT. Let X be a hyperbolic Riemann surface and let μ be an extremal Beltrami differential on X with $\|\mu\|_\infty \in (0, 1)$. It is proved that, if $\{\phi_n\}$ is a Hamilton sequence of μ , then $\{\phi_n\}$ must be a Hamilton sequence of any extremal Beltrami differential ν contained in $[\mu]$. This result proved a conjecture of the first author of this paper in 1996. This result is also a generalization of two known results.

§1. INTRODUCTION

Let X be a given hyperbolic Riemann surface and let $Belt(X)$ be the Banach space of bounded measurable Beltrami differentials $\mu = \mu(z)\bar{d}z/dz$ on X with L_∞ -norm.

By $\mathcal{M}(X)$ we denote the open unit ball of $Belt(X)$, namely

$$\mathcal{M}(X) := \{\mu \in Belt(X) : \|\mu\| < 1\}.$$

For any given element μ of $\mathcal{M}(X)$, there is a quasiconformal mapping f^μ of X onto X with the Beltrami coefficient μ , which is normalized by

$$f^\mu(\pm 1) = \pm 1 \quad \text{and} \quad f^\mu(i) = i.$$

Such a quasiconformal mapping $f^\mu : X \rightarrow X$ is uniquely determined by μ .

Two elements μ and ν in $\mathcal{M}(X)$ are said to be Teichmüller equivalent to each other, denoted by $\mu \sim \nu$, if there is a conformal mapping of Φ of X onto X such that

$$(f^\nu)^{-1} \circ \Phi \circ f^\mu \text{ is homotopic to the identity map of } X \text{ (Mod } \partial X).$$

The Teichmüller space $T(X)$ of X is defined as the quotient space $\mathcal{M}(X)/\sim$:

$$T(X) := \{[\mu] : \mu \in \mathcal{M}(X)\},$$

where $[\mu]$ is the Teichmüller equivalence class of μ .

An element μ in $\mathcal{M}(X)$ is said to be an extremal, if

$$\|\mu\|_\infty \leq \|\mu'\|_\infty, \quad \forall \mu' \in [\mu].$$

Let $\mathcal{Q}(X)$ be the Banach space of integrable holomorphic quadratic differentials $\phi = \phi(z)dz^2$ on X with L_1 -norm.

2000 *Mathematics Subject Classification.* Primary 37F30, Secondary 30F70.

Key words and phrases. quasiconformal mappings, extremal quasiconformal mappings, Hamilton sequences.

The research is partially supported by the National Natural Science Foundation of China (Grant number No. 11571049 and No. 10571009).

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