Erratum


A variational proof for the existence of a conformal metric with preassigned negative Gaussian curvature for compact Riemann surfaces of genus $> 1$

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Section 1 second paragraph should read: we minimize the functional

$$S(\sigma) = \int_M (K(\sigma) - K)^2 e^{2\sigma} d\mu$$

over $W^{2,2}(M)$ . . . Using Sobolev embedding theorem we show that $S(\sigma)$ takes its absolute minimum on $W^{2,2}(M)$ which corresponds to a $C^\infty$ metric on $M$ of negative curvature $K$.

Section 2.1 should read: The functional $S(\sigma) = \int_M (K(\sigma) - K)^2 e^{2\sigma} d\mu$ is non-negative on $W^{2,2}(M)$, so that its infimum

$$S_0 = \inf \{S(\sigma), \sigma \in W^{2,2}(M)\}$$

exists and is non-negative. Let $\{\sigma_n\}_{n=1}^\infty \subset W^{2,2}(M)$ be a corresponding minimizing sequence,

$$\lim_{n \to \infty} S(\sigma_n) = S_0.$$

Our main result is the following

**Theorem 0.1.** Let $M$ be a compact Riemann surface of genus $g > 1$. The infimum $S_0$ is attained at $\sigma \in C^\infty(M)$, i.e., the minimizing sequence $\{\sigma_n\}$ contains a subsequence that converges in $W^{2,2}(M)$ to $\sigma \in C^\infty(M)$ and $S(\sigma) = 0$. The corresponding metric $e^\sigma h dz \otimes d\bar{z}$ is the unique metric on $M$ of negative curvature $K$.

Section 3, proof of the proposition (3.1) should read: . . . Set $G(t) = S(\sigma + t\beta) - S_0$, where $\beta \in W^{2,2}(M)$ . . .