Teichmüller Theory and Applications to Geometry, Topology, and Dynamics

Volume 1: Teichmüller Theory

(Second Printing)

Errata, complete as of December 11, 2017

We thank Wolf Jung, Ahmad Rafiqi, Samuel Roth, Xiaoguang Wang, and Alex Wright for their contributions to this list. Our apologies to anyone whose name has been inadvertently omitted.

Errata

Page 21 Exercise 1.8.11: Part 1 should read "Two nonidentity Möbius transformations commute if and only if they have the same fixed points, or are commuting involutions each interchanging the fixed points of the other." (As the statement currently stands, $f(z) = -z$ and $g(z) = 1/z$ are a counterexample.)

Page 222 [posted September 29, 2017] Equation 5.4.9 should have a pth root on the right:

$$\|q\|_p \left(\int_X \frac{|q|^p}{\rho^{2p-2}} \right)^{1/p}.$$

Page 267 [posted March 25, 2017] Equation 6.6.7: The second term should be "$(1 + t\partial\xi + o(t))$", not "$(1 + \partial\xi + o(t))$".

Page 268 Line 3: "$\overline{\partial}\xi = 0$" should be "$\overline{\partial}\xi = \nu$".

Page 294 [posted March 25, 2017] Proposition 6.12.4: in the second line of part 2, "a an open subset" should be "an open subset".

Page 385 [posted Jan. 22, 2016] In Definition A7.2.1, after "given by the formula" the subscript and superscript on ρ (after the sum) should be exchanged; it should be

$$\sum_{i=0}^{k+1} (-1)^i \rho^{U_0 \cap \cdots \cap U_{k+1}}_{U_0 \cap \cdots \widehat{U}_i \cdots \cap U_{k+1}}$$

not

$$\sum_{i=0}^{k+1} (-1)^i \rho^{U_0 \cap \cdots \widehat{U}_i \cdots \cap U_{k+1}}_{U_0 \cap \cdots \cap U_{k+1}}$$

Our convention (equation A7.1.1) is that when $V \subset U$, we write ρ_U^V, not the reverse: the small set goes on top. On top, we are taking the intersection of more sets, so it is smaller.

Page 392 Third paragraph of Section A7.4, next to last line: $H^1(X, \mathcal{O}_X^*)$, not $H(X, \mathcal{O}_X^*)$

Page 392 Equation A7.4.1:

$$\varphi_{U_1}^{-1} \circ \varphi_{U_2} : \mathbb{C} \times (U_1 \cap U_2) \to \mathbb{C} \times U_1$$

should be

$$\varphi_{U_1}^{-1} \circ \varphi_{U_2} : (U_1 \cap U_2) \times \mathbb{C} \to U_1 \times \mathbb{C}$$

Equation A7.4.2:

$$\varphi_{U_1}^{-1} \circ \varphi_{U_2}(z, x) = \big(M_{U_1,U_2}(x)z, x\big)$$

should be

$$\varphi_{U_1}^{-1} \circ \varphi_{U_2}(x, z) = \big(x, M_{U_1,U_2}(x)z\big)$$

Page 412 [new Dec. 22, 2017] In Theorem A9.14 (Serre duality) we should have said that X is of dimension n. On the fourth line of the theorem, at the very end, Ω should be Ω_X. Thus the theorem should read:

Let V be an analytic vector bundle on a compact complex manifold X of dimension n, and let V^* be the dual vector bundle. Then the pairing of $A_X^{0,k}(V)$ with $\mathcal{D}_X^{n,n-k}(V^*)$ induces a duality of $H^k\big(X, \mathcal{O}_X(V)\big)$ with $H^{n-k}\big(X, \mathcal{O}_X(V^*) \otimes \Omega_X^{\otimes n}\big)$.

Notes and amplifications

Pages 267 and 268 [added March 25, 2017] Proof of Lemma 6.6.3: A reader asked, "why is $\ker[D\Phi_S(\tau)]$ spanned by tangent vectors of curves in $\Phi_S^{-1}(\Phi_S(\tau))$? Answer: by Theorem 6.5.1, part 2, $\Phi_S^{-1}(\Phi_S(\tau))$ is a manifold, and the tangent space is always spanned by tangent vectors to curves in the manifold. This depends on Φ_S being a split submersion; see Proposition A5.6 and the discussion page 363 following Definition A5.7.

The reader also asked, how is the assumption that ξ vanishes on $\mathbb{R}$ being used? Answer: It is used to say (in equation 6.6.8) that when $z \notin \mathbf{H}$, i.e., when $z \in \mathbf{H}^*$, then

$$f^{t\widehat{\widehat{\partial}\xi}}(z) = z + o(t).$$

(This also uses Proposition 4.7.6.)