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ERRATUM TO "INTEGRALITY AND ARITHMETICITY OF CO-COMPACT LATTICE CORRESPONDING TO CERTAIN COMPLEX TWO-BALL QUOTIENTS OF PICARD NUMBER ONE", ASIAN J. MATH., VOL. 8, NO. 1, 107–130, 2004*

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It has been called to the attention of the author that more details need to be provided in proving Subcase IICi (see (1) below). The purpose of this erratum is to provide such details, and correct some misstatements. The unexplained notations are the same as in the original paper.

(1) Page 117, line -4ff, add the following Lemma.

LEMMA 1. *The set $f \circ \widetilde{p}(H_a)$ is convex.*

Proof. Suppose Σ is an apartment of the building such that $f \circ \widetilde{p}(H_a) \cap \Sigma$ is unbounded. We need to show that the image $f \circ \widetilde{p}(H_a) \cap \Sigma$ is isometric to $\mathbb{R} \cap \Sigma$ as a set with the Euclidean metric, if $\mathbb{R} \cap \Sigma \neq \emptyset$, where $H_a = \widetilde{h^{-1}(a)}$. The earlier discussions in the article shows that it is true for each chamber in Σ. Without loss of generality, we may assume that the image of the ramification divisor R by f in an apartment Σ containing an open set of L_a is defined by $x_2 - x_3 = 0$, so that $L_a \cap C$ for some chamber C in Σ is a line segment defined by $x_2 - x_3 = c_a$, a generic constant $\neq 0$. Hence R is defined by $\omega_2 - \omega_3 = 0$ on M_1. We are done if $f|_{\widetilde{p}(H_a)}$ is non-singular, which implies that $f \circ \widetilde{p}(H_a)$ is isometric to $\mathbb{R}$. $f \circ \widetilde{p}|_{H_a}$ has singularity only along another ramification divisor R_1 on $\widetilde{M}_1$, which is the stabilizer of an element $\iota \in \overline{W}$ of order 2 since its image lies in the wall of a building. Hence we may assume that the image of R_1 in Σ is defined by $x_1 - x_2 = 0$. As the local covering group generated by ι switches dx_1 and dx_2, we observe that $f \circ \widetilde{p}|_{H_a}$ is extended beyond $f \circ \widetilde{p}|_{H_a} \cap f \circ \widetilde{p}(R_1)$ in a unique way as a line segment in the adjacent chamber of C in Σ defined by $x_1 - x_3 = c'_a$ for some constant c'_a determined by continuity.

Let τ be the global one form on M_1 annihilating R_1, defined locally by $1/2(\kappa_1 + \kappa_2)$, where $\kappa_i = (p^* f^*(dx_i) \otimes \mathbb{C})^{1,0}$. τ is the pull back of a holomorphic one form τ_o on $E := A/\ker(\tau)$ by $\alpha_o : M_1 \xrightarrow{\alpha} A \xrightarrow{q} E$. Let $\eta = \alpha_o^* \Re(\tau_o)$. Fix $z_o \in H_a$ so that $\widetilde{p}(z_o)$ is a regular point of f. Define $\Phi : \widetilde{M}_1 \to \mathbb{R}$ by $\Phi(z) = \int_{z_o}^{z} \eta$.

We claim that for each apartment Σ for which $L_a \cap \Sigma$ is unbounded, there is a covering map $\Psi : \mathbb{R} = \Phi(\widetilde{M}_1) \to L_a \cap \Sigma$ which is a local isometry, so that $\Psi \circ \Phi(z) = f \circ \widetilde{p}(z)$. Suppose $\Phi(z_1) = \Phi(z_2)$. Join z_i to z_o by a unique geodesic γ_i on H_a for $i = 1, 2$. It follows that for all t on γ_1, there exists $w(t) \in \gamma_2$ varying continuously with respect to t such that $\Phi(w(t)) = \Phi(t) \in \mathbb{R}$. It suffices for us to show that $f \circ \widetilde{p}(t) = f \circ \widetilde{p}(w(t))$ for all $t \in \gamma_1$ by continuity argument. This is clearly so for t in a small neighborhood of z_o or a regular point of f from definition of τ. Hence we only need to make sure that the argument can be extended beyond the singularity set $\mathcal{S}$ of f. Observe that the spectral covering is defined equivariantly on $\widetilde{M}$ and it suffices for us to discuss on M_1. As formulated in §2 of the paper, M_1 is the desingularization of M_{1o}, a connected component of M'_1 defined by the single equation $\sum_{i=0}^{\ell} \alpha_i(x) t^{l-i} = 0$ in T^*M, where $l = 6$. Let $\pi : \widetilde{M}_1 \to M_1$ be the universal covering.

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