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# CORRECTION TO THE ARTICLE COVERING OF A HOLOMORPHICALLY CONVEX MANIFOLD CARRYING A POSITIVE LINE BUNDLE

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**Let $\widetilde{M}$ be a connected holomorphic covering of a holomorphically convex manifold $M$. If $M$ carries a positive holomorphic line bundle $L$ such that the pullback of $L$ is holomorphically trivial on $\widetilde{M}$, then $\widetilde{M}$ is a Stein manifold.**

In the paper being corrected, the argument given on page 203, six lines from the bottom, is erroneous. It is asserted that, after passing to a subsequence of $(z_k) := (x_{\nu_k})$ of $(x_\nu)$, we may assume that

$$r(z_k) = \mathrm{dist}_{\tilde{g}}(z_k, x_0) \geq k + \rho_k,$$

where $\rho_k := \sup_{1\leq l\leq k} \sup_{x\in X_l} \|s\|_{\pi^*L}$, since this would imply

$$r(z_k) = \mathrm{dist}_{\tilde{g}}(z_k, x_0) \geq k + c|f(z_k)|$$

for $k$ large enough, where $f_0$ is a nowhere vanishing holomorphic function on $\pi^{-1}(U)$. But a priori $(|f(z_k)|)$ might tend to infinity. We overcome this difficulty as follows.

If the sequence $(\rho_k)$ is bounded then we follow fully Case 1 on page 203.

If the sequence $(\rho_k)$ is unbounded, assume that $\dim M = n \geq 2$. Following the notations of Case 1, let $k$ be large enough such that $9/R \leq \rho_k^{1/(n-1)} \leq \rho_k^{m/(n-1)}$ for all $m \geq 1$. Set

$$Y_k^m := \phi_k^{-1}(B(\phi_k(z_k), \rho_k^{-m/(n-1)})) \subset\subset X_k := \phi_k(B(\phi_k(z_k), R/(4))).$$

($X_k$ is defined on page 203, line −4.) Let $\theta \in C^\infty(\mathbb{R})$ such that $\theta = 1$ if $0 \leq t \leq 1/2$ and $\theta = 0$ if $t \geq 1$ and $0 \leq \theta \leq 1$. Let $t_m$ the $C^\infty$ section of $\pi^*(L^m)$ over $\widetilde{M}$ defined by 0 on $\widetilde{M} \setminus \bigcup_k Y_k^m$ and

$$t_m(x) := \theta(\rho_k^{m/(n-1)} \|\phi_k(x) - \phi_k(z_k)\|) e^{r(z_k)} \otimes_{i=1}^m s \quad \text{if } x \in Y_k^m.$$

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Following page 204, line $-2$, we have on $Y_k^m$

$$\|\bar\partial t_m\|^2_{\pi^*(L^m)} \le C\rho^{2m/(n-1)} e^{2r(z_k)} \rho_k^{2m}.$$

Hence

$$\begin{aligned}\int_{\widetilde{M}} \|\bar\partial t_m\|^2 e^{-(\Psi+3c_1\tau)} dV_{\tilde g} &\le C \sum_{k=1}^{+\infty} \rho^{2m/(n-1)} e^{-r(z_k)} \rho_k^{2m} \operatorname{Vol}_{\tilde g}(Y_k^m)\\ &\le C \sum_{k=1}^{+\infty} \rho^{2m/(n-1)} e^{-r(z_k)} \rho_k^{2m} \operatorname{Vol}(B_e(\phi_k(z_k), \rho_k^{-m/(n-1)}))\\ &\le C \sum_{k=1}^{+\infty} e^{-r(z_k)} < \infty,\end{aligned}$$

since we may suppose that $r(z_k) \ge k$ for $k$ large enough. After this, we follow page 205, line $-3$.

If $\dim M = 1$, then $\widetilde{M}$ is a noncompact Riemann surface and hence a Stein manifold, by the Behnke–Stein theorem.

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