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ERRATUM

Erratum to: The range of the tangential Cauchy–Riemann system to a CR embedded manifold

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The referee has called my attention to an error in the proof of Theorem 2.6. The Harvey–Lawson variety may be singular at M even in case this is strongly pseudoconvex (see [1, 2, 4]). However, there does exist a manifold X with boundary M (not just a strip with M as a component of its boundary as in Theorem 2.2); this is true if we do not make the unnecessary request that X stays inside $\mathbb{C}^n$.

Theorem 1 *Let $M \Subset \mathbb{C}^n$ be a smooth, compact, connected, CR manifold without boundary of hypersurface type, pseudoconvex-oriented. Then, there is a manifold X with boundary M equipped with a C^∞-map $\pi : X \to \mathbb{C}^n$ such that π is holomorphic on $X \setminus M$ and is a smooth embedding on a neighborhood of M. Moreover, there is a weight function on X which is strictly plurisubharmonic in a neighborhood of M.*

Proof We start from the strip on the pseudoconvex side of M, smooth up to M, of Theorem 2.2. We point out that this strip is contained in $\mathbb{C}^n$ since it is given as a smooth family of discs of $\mathbb{C}^n$ (attached to either M or its extension

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at points of local minimality and propagation respectively). We further extend the strip, again from its pseudoconvex side, to a normal variety over $\mathbb{C}^n$, according to Theorem I p. 547 of [5]. This point is also explained in detail by Yau [7] at the end of Sect. 5 and in the entire Sect. 6 which follows in turn Siu's proof in [6] of Rothstein's Theorem. But then the singularities of the normal variety are confined outside the initial strip and thus they are compact and hence isolated. By blowing them up, we get the manifold X with smooth boundary M and the map $\pi : X \to \mathbb{C}^n$ with the required properties.

Finally, notice that, X coinciding with the strip of $\mathbb{C}^n$ in a neighborhood of M, it inherits from $\mathbb{C}^n$ the strictly plurisubharmonic weight $|z|^2$, $z \in \mathbb{C}^n$. □

With Theorem 1 in hand, the proof of Theorem 2.6 follows immediately from Kohn [3] Theorem 5.3.

References

1. Fefferman, C.: Editor's note on papers by F.R. Harvey and H.B. Lawson Jr.: On boundaries of complex analytic varieties. I [Ann. of Math. (2) 102(2), 223–290 (1975); MR0425173 (54 13130)] and by H.S. Luk and S.S.-T. Yau: Counterexample to boundary regularity of a strongly pseudoconvex CR submanifold: an addendum to the paper of Harvey–Lawson [ibid. 148(3), 1153–1154 (1998); MR1670081 (99j:32006)], Ann. of Math. (2) **151**(2), 875 (2000)
2. Harvey, F.L., Lawson, H.B.: On boundaries of analytic varieties, I. Ann. Math. **102**, 223–290 (1975)
3. Kohn, J.J.: The range of the tangential Cauchy–Riemann operator. Duke Math. J. **53**, 525–545 (1986)
4. Luk, H.S., Yau, S.T.: Counterexample to boundary regularity of a strongly pseudoconvex CR submanifold: an addendum to the paper of Harvey–Lawson. Ann. Math. (2) **148**(3), 1153–1154 (1998)
5. Rothstein, W., Sperling, H.: Einsetzen analytischer Flächenstücke in Zyklen auf komplexen Räumen. (German) 1966 Festschr. In: Gedächtnisfeier K. Weierstrass, pp. 531–554. Westdeutscher Verlag, Cologne (1966)
6. Siu, Y.-T.: Techiques of Extension of Analytic Objects. Lect. Notes in Pure and Appl. Math., vol. 8. Marcel Dekker, New York (1974)
7. Yau, S.: Kohn-Rossi cohomology and its application to the complex Plateau problem I. Ann. Math. **113**, 67–110 (1981)