A CORRECTION TO: “SOME CHARACTERIZATIONS OF SPACE-FORMS”

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In [1], for the application to Theorem 4.3, one needs a version of Proposition 3.1 assuming that the manifold supports an inhomogeneous Poincaré-Sobolev inequality of the type (0.1) below. Indeed, an easy modification of the original argument yields the following

Proposition 3.1 bis. *Let $(M, \langle \cdot, \cdot \rangle)$ be a complete manifold and assume that, for some $0 \leq \alpha < 1$ and some non-negative function h , the inhomogeneous Sobolev–Poincaré type inequality*

$$(0.1) \quad \int_M (|\nabla \varphi|^2 + h\varphi^2) \geq S(\alpha)^{-1} \left\{ \int_M |\varphi|^{\frac{2}{1-\alpha}} \right\}^{1-\alpha}$$

holds for every $\varphi \in C_0^\infty(M)$ with a positive constant $S(\alpha) > 0$. Suppose that $\psi \in Lip_{loc}(M)$ is a positive solution of

$$(0.2) \quad \psi \Delta \psi + a(x) \psi^2 + A |\nabla \psi|^2 \geq 0 \quad (\text{weakly}) \text{ on } M$$

satisfying

$$(0.3) \quad \int_{B_r} |\psi|^\sigma = o(r^2) \text{ as } r \rightarrow +\infty$$

with $A \in \mathbb{R}$, $\sigma - A - 1 > 0$, $\sigma \neq 0$, and $a(x) \in C^0(M)$. Then

$$(0.4) \quad \left\| a_+(x) + \frac{4(\sigma - A - 1)}{\sigma^2} h \right\|_{L^{\frac{1}{\alpha}}(M)} \geq \frac{4(\sigma - A - 1)}{\sigma^2} S(\alpha)^{-1}.$$

Furthermore, if ψ is assumed to be non-negative and not identically zero, then (0.4) holds under the further assumption that $\sigma > 0$.

Thus the statement of Theorem 4.3 should read

Theorem 4.3. *Let $f : (M^m, \langle \cdot, \cdot \rangle) \rightarrow (N^n, \langle \cdot, \cdot \rangle)$ be an isometric immersion of the complete manifold M of dimension $m \geq 3$ into the Cartan-Hadamard manifold N whose sectional curvature (along f) satisfies*

$$(0.5) \quad (0 \geq) {}^N \text{Sect}_{f(x)} \geq - {}^N R(x)$$

for some function ${}^N R \in C^0(M)$. Denote by H and II , respectively, the mean curvature vector field and the second fundamental tensor of f . Assume that, for

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some $\varepsilon > 0$,

$$\|\varepsilon^2 |H|^2 + (m-1) {}^N R(x) + |\text{II}| (|\text{II}| + m |H|)(x)\|_{L^{\frac{m}{2}}} < \frac{m}{m-1} S_2(m, \varepsilon)^{-1}.$$

Then M has only one end.

Correspondingly, (4.12) in Remark 4.4 must read

$$(4.12) \quad \|\varepsilon^2 |H|^2 + q(x)\|_{L^{\frac{m}{2}}} \leq S_2(m, \varepsilon)^{-1}.$$

Versions of Theorems 4.5 and 4.6 based on Proposition 3.1 bis can also be formulated. We omit the details.

Finally, the assumption that N has non-positive sectional curvature must be added in the statement of Theorem 4.6.

REFERENCES

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