CORRECTION TO: ON LIE'S APPROACH TO THE STUDY OF TRANSLATION MANIFOLDS, JOURNAL OF DIFFERENTIAL GEOMETRY 26 (1987), 253-272

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Abstract. Proposition (2.11) of the article in the title is incorrect, and the statements of several theorems depending on this result must be altered accordingly.

It has come to the author's attention that Proposition (2.11) of the article [3] is incorrect. Let $A \subset \mathbb{C}^4$ be a surface and let $|II|$ be its Griffiths-Harris second fundamental form ([1], (1.18)) – in this case $|II(p)|$ is a pencil of quadrics in the projectivized tangent space $\mathbb{P}T_p(A) \cong \mathbb{P}^1$. In Proposition (2.11) of [3], we claimed that if A satisfies:

$$(*)\ |II(p)| \text{ has a base point for all } p \in A,$$

then A must either lie in a $\mathbb{C}^3$, or be a ruled surface. However, the article [2] by George Jennings contains an explicit counterexample to this claim, attributed to Mark Green ([2], Example, page 108). The proof of Proposition (2.11) of [3] is erroneous.

The author has not been able to derive any complete alternate characterization of surfaces A satisfying the condition (*), or to see how the cases where (*) is satisfied might be ruled out in the consideration of generalized double translation hypersurfaces S in $\mathbb{C}^4$ in sections 5 and 6.

Hence in Theorem (5.1) of [3], an additional case should be included: S may also contain ∞^1 translates of surfaces whose second fundamental form $|II(p)|$ has a base point for all $p \in A$. Finally, Theorem (6.1) of [3] is only proved under the additional hypothesis that Θ is not one of the hypersurfaces in this extra case from Theorem (5.1) (or that the parametrizations of Θ as a generalized double translation hypersurface are in the general position described for instance in Figure 1 of [3]). It seems unlikely that a theta-divisor in an abelian variety could have parametrizations as in the extra case of (5.1) above, but without a good replacement for Proposition (2.11), it is difficult to see how that might be proved.

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References

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[2] Jennings, G., *Lines having high contact with a projective variety*, Pac. J. Math. **125** (1986), 103-115.
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