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ERRATUM TO "ALMOST-COMPLEX STRUCTURES AND GEOMETRIC QUANTIZATION"

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The proof of Theorem 2.3 of [1] contains an erroneous assumption. It is (tacitly) assumed the Laplacian Δ_k on $\mathcal{E} \otimes L^{\otimes k}$ preserves the degree decomposition of $\mathcal{E}$. However, Δ_k is the Laplacian for the Clifford connection, not the Levi-Cevita connection, and in general only preserves degree mod 2. The corrected statement is:

Theorem 2.3. *There exist constants C, K such that, for $\phi \in C^\infty(X, \mathcal{E} \otimes L^{\otimes k})$, $k > K$, $D\phi = 0$ implies that*

$$\|\psi\| < Ck^{-1/2} \|\phi_0\|,$$

where $\phi = \phi_0 + \psi$ is the decomposition of ϕ into zero and higher degree components.

Proof. In general we have $\langle \phi, D^2\phi\rangle = \langle \phi, (\Delta_k + k\sigma + R)\phi\rangle$. So $D\phi = 0$ implies

$$\langle \phi, \Delta_k\phi\rangle + \langle \phi, k\sigma\phi\rangle = -\langle \phi, R\phi\rangle.$$

By [1], Theorem 2.1 we have

$$\langle \phi, \Delta_k\phi\rangle > (kn - C') \|\phi\|^2,$$

and the form of σ implies

$$\langle \phi, k\sigma\phi\rangle \geq -kn \|\phi_0\|^2 + k(2-n) \|\psi\|^2.$$

Putting these facts together, we deduce that

$$-C' \|\phi_0\|^2 + (2k - C') \|\psi\|^2 < \|R\| \; \|\phi\|^2,$$

which implies

$$\|\psi\|^2 < Ck^{-1} \|\phi\|^2.$$

□

This same method should also be used in the proof of Theorem 4.2. Thus in Theorems 4.2, 4.3 and Corollary 4.4 the error terms should be $O(k^{-1/2})$ instead of $O(1/k)$.

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References

1. D. Borthwick and A. Uribe, *Almost-complex structures and geometric quantization*, Math. Res. Lett. **3** (1996), 845–861.

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