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ERRATUM TO: GUPTA-BLEULER QUANTIZATION OF THE MAXWELL FIELD IN GLOBALLY HYPERBOLIC SPACE-TIMES

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In Section 5.1 in [1] it is incorrectly claimed that condition (A) is equivalent to the vanishing of the operator B in the expansion

$$d\langle f, E_z f\rangle = \Big(\langle f, Af\rangle\, \delta(z) + \langle f, Bf\rangle\, \frac{\Theta(z)}{\sqrt{z}} + \big\langle f, C(\sqrt{z}) f\big\rangle\, \Theta(z) \Big)\, dz$$

of the spectral measure. It is however equivalent to the vanishing of B restricted to $\Omega^{p\perp}_{(2)}(\Sigma)$, i.e. to the vanishing of B on the orthocomplement of the L^2-kernel of Δ. Similarly, Proposition 5.1 claims that in the case that the Riemannian manifold is Euclidean at infinity, the coefficient B vanishes. However, the proof provided only shows that $B|_{\Omega^{p\perp}_{(2)}(\Sigma)} = 0$. Therefore, Proposition 5.1 needs to be replaced by the following statement:

Proposition 5.1. *Let (Σ^{2n+1}, g) with $n \geq 1$ be a complete Riemannian manifold which is Euclidean at infinity in the sense that there exist compact subsets $K_1 \subset \Sigma$ and $K_2 \subset \mathbb{R}^{2n+1}$ such that $\Sigma \setminus K_1$ is isometric to $\mathbb{R}^{2n+1} \setminus K_2$. Then the operator B vanishes on $\Omega^{p\perp}_{(2)}(\Sigma)$, and condition (A) is satisfied.*

The sequence u_ϵ converges in $\mathcal{H}_{-1}$ to an element in the range of B, and it is in the orthogonal complement of the the L^2-kernel of Δ. However, this convergence is not necessarily in L^2, therefore the limit need not be orthogonal to $\ker(\Delta)$.

In the proof, the sequence u_ϵ needs to be defined as $u_\epsilon := \hat{\chi}_\epsilon(\Delta^{1/2})(v)$, and the factor of ϵ in front of the integral the last formula of the proof needs to be removed.

In fact it is known that for general operators the coefficient B may fail to vanish. An example are Schrödinger operators on $\mathbb{R}^3$ with compactly supported potential. In that case the coefficient B has been calculated by Jensen and Kato in [3]. In a more general setting for functions on asymptotically conic manifolds, B has also been described by Guillarmou and Hassell in [2].

For our constructions only condition (A) is needed, therefore the rest of our article [1] is not effected by this.

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