Addendum to: Graded KMS Functionals and the Breakdown of Supersymmetry

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The assumptions of Corollary 8 are unnecessarily strong. In fact, they would exclude many examples of interest [2]. We thank Ola Bratteli for pointing out this reference to us.

The statement holds, however, in more generality if one replaces in the definition of φ–supersymmetric dynamical systems the algebra $\mathfrak{M}_{\mathrm{an}}$ by any weakly dense $\widetilde{\gamma}$–invariant subalgebra $\mathfrak{M}_0 \subset \mathfrak{M}$ which is contained in the intersection of the domains of $\widetilde{\delta}_0$ and $\widetilde{\delta}^2$. The existence of such a subalgebra is clearly a necessary prerequisite for the definition of supersymmetry.

The proof that $\widetilde{\delta}_0 = 0$ remains true in this more general situation since $\widetilde{\delta}_0$ is a weakly closed operator. If such an operator vanishes on some dense domain, it vanishes identically. By the original argument, $\widetilde{\delta}_0 \restriction \mathfrak{M}_0 = 0$, so one arrives at the statement of the corollary also under these weak conditions.

References

[1] D. Buchholz, and R. Longo, *Graded KMS Functionals and the Breakdown of Supersymmetry*, Adv. in Th. and Math. Phys., **3** (1999), 615-627.

[2] A. Kishimoto and H. Nakamura, *Super–derivations*, Commun. Math. Phys., **159** (1994), 15.