Erratum: What is a Gauge Transformation in Quantum Mechanics? [Phys. Rev. Lett. 80, 4613 (1998)]

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In our Letter, the definition of the space L in the infinite dimensional case, given in Eq. (11) and immediately preceding lines, should read as follows:

We define L as the subspace of $\mathcal{H}$ formed by the vectors that can be written as

$$\rho = \sum_{i=1}^{n} (U[g_i]\rho_i - \rho_i) . \tag{11}$$

We also remark that the notion of gauge equivalence of unconstrained quantum states discussed in our Letter is central in the work of Landsman [1] as well. In [1], the interesting proposal is made to derive the physical Hilbert space by replacing the inner product of $\mathcal{H}$ with an appropriate positive semidefinite sesquilinear form whose null directions are the "complete" quantum gauge transformations that we presented. In our Letter, the quantum gauge transformations are derived directly and algebraically via Eq. (2) from the transformations generated by the Dirac constraints, while in [1] the sesquilinear form can be constructed, for instance, by means of a group integration procedure. The procedure in [1], on the other hand, has the merit of directly determining the scalar product on the physical Hilbert space.

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[1] N. P. Landsman, Classical Quantum Gravity **12**, L119 (1995); hep-th/9305088; hep-th/9411171; hep-th/9411174; hep-th/9508134; dg-ga/9601009; gr-qc/9807069; math-ph/9807029; Mathematical Topics Between Classical and Quantum Mechanics (Springer-Verlag, New York, to be published); N. P. Landsman and K. K. Wren, Nucl. Phys. **B502**, 537 (1997).

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