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Errata

In the article by K.-E. Hellwig and D. Krausser, "Propositional Systems and Measurements—II" [*International Journal of Theoretical Physics*, **10**, 261–272 (1974)], the proof of lemma 2 contained an error in that the assumed conjunctive normal form is not trivial and does not hold in general. Another proof was found for the lemma and is given in the Appendix of "Propositional Systems and Measurements—III," [*International Journal of Theoretical Physics*, **16**, 775–793 (1977)].

In the article by Kenneth J. Epstein, "Affine Connection in Hilbert Space" [*International Journal of Theoretical Physics*, **15**, 793–799 (1976)], please note the following errors and emendations. In line 10 on page 795, "Dirac matrics" should be "Dirac matrices." In equation (2.4), the symbol Ø should be $\mathcal{O}$. In line 14 on page 798, "inertial frame" should be "Lorentz frame," i.e., an inertial frame in which the space-time metric has the Lorentz form (Krause, 1976). This is then the "Lorentz picture" of special relativity, analogous to the Heisenberg picture of quantum theory, in which the various frames of reference can be called "Heisenberg frames," recognizing that Q_μ can vanish in more than one representation (i.e., on more than one basis).

Even in a Lorentz frame, however, Ω_μ need not vanish, because its components are Hilbert-space operators, and cannot be restricted to the domain of ordinary complex numbers (Cartan, 1966). Contrary to causing difficulty, this allows Ω to be used for defining quantum mechanical pictures, through the relation [a variation of equation (2.1)]

$$\gamma^\alpha_{;\mu} = \gamma^\alpha_{,\mu} + \Omega_\mu \gamma^\alpha - \gamma^\alpha \Omega_\mu = 0 \tag{E.1}$$

where the γ^α are transformed Dirac matrices (no longer constant). In the transformation between the Heisenberg and Schrödinger pictures, $i\Omega o$ is equated to the Hamiltonian operator of the first-quantized Dirac equation, thus identifying the Hamiltonian as a connection (rather than a tensor) component in Hilbert space.

In equation (1.1), the e^μ_α are absolute constants, i.e., $e^\mu_{\alpha;\nu} = 0$. This relates ω to Γ, and allows e^μ_α to function as a 16-component metric, in a manner that reflects the dual symmetry principles of *general covariance* and *local Lorentz* *covariance*, which are equivalent (which is one way to state the Equivalence Principle).

Equation (2.2) is not expressed in a manifestly covariant form, and yet is covariant under local Lorentz transformations Λ^α_β with spinor representation S, due to the homomorphic identity,

$$\Lambda^\alpha_\beta S \gamma^\beta S^{-1} = \gamma^\alpha \tag{E.2}$$

which relates the Lorentz group to its covering group (Hermann, 1966; Pontryagin, 1966). This preserves the right side of equation (2.2). Since S is an isometry of the spinor metric β, the left side is also invariant.

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Pontryagin, L. S. (1966). *Topological Groups*, 2nd Ed. (Gordon and Breach, New York), Chap. 9.