Erratum: Is the local Lorentz invariance of general relativity implemented by gauge bosons that have their own Yang-Mills-like action? [Phys. Rev. D 102, 065011 (2020)]

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Minus-sign typos

The minus sign in Eq. (1) should be omitted. The same minus sign should be omitted from the penultimate line of the first partial paragraph of the second column of the first page and from Eqs. (7, 43, 46, and 89). No conclusions are affected.

Missing metric

The action Eq. (33)

$$S_L = -\frac{1}{4f^2}\int \mathrm{Tr}(F^\dagger_{ik}\, F^{ik})\sqrt{g}\, d^4x \tag{1}$$

of the fields $F_{ik} = [\partial_i + L_i, \partial_k + L_k]$ that gauge Lorentz transformations should be [1]

$$S_L = -\frac{1}{4f^2}\int \mathrm{Tr}(F^\dagger_{ik}\, h\, F^{ik} h^{-1})\sqrt{g}\, d^4x \tag{2}$$

in which $h(x)$ is a positive, symmetric metric that transforms as [1]

$$h'(x) = D^\dagger(\Lambda(x))h(x)D(\Lambda(x)) \tag{3}$$

where D is Dirac's $D^{(1/2,0)} \oplus D^{(0,1/2)}$ representation of $SO(3,1)$. A suitable action density for $h(x)$ is [1]

$$S_h = -m^2 \mathrm{Tr}[(D_i h)h^{-1}(D^i h)h^{-1}] \tag{4}$$

in which $D_i h = \partial_i h - hL_i - L_i^\dagger h$. The action density S_h gives the mass $2\sqrt{2}m$ to the three Lorentz bosons that gauge boosts and that may contribute to dark matter.

Lorentz bosons, which are of spin two, couple to spin and only three are massive, so Eqs. (68–70) should contain Coulomb and Yukawa terms that take into account the spins of the fermions. The second sentence of Sec. IX should be omitted.

I'd like to thank Ansar Fayyazuddin for pointing to the noninvariance of the action (1).

[1] K. Cahill, General internal gauge symmetry, Phys. Rev. D **18**, 2930 (1978); A soluble gauge theory of a noncompact group, Phys. Rev. D **20**, 2636 (1979); Nonlinear internal symmetry, J. Math. Phys. (N.Y.) **21**, 2676 (1980); K. Cahill and S. Özenli, Unitary gauge theories of noncompact groups, Phys. Rev. D **27**, 1396 (1983).

