and assume that $D_\mu\psi$ transforms as an ordinary field:

$$[D,D_\mu\psi]=ia(\sigma,\phi^2)D_\mu\psi\,, \tag{26'}$$

$$[K_\nu,D_\mu\psi]=i\{b(\sigma,\phi^2)K_\nu+c(\sigma,\phi^2)\phi_\nu+d(\sigma,\phi^2)\phi^\lambda S_{\lambda\nu}\}D_\mu\psi\,. \tag{27'}$$

Equation (9) requires the double commutator $[K_\nu,[K_\mu,\psi]]$ to be symmetric. Evaluation of this using (27′) yields a term $dS_{\mu\nu}\psi$ and hence $d=0$. To evaluate commutators of $\partial_\mu\psi$, we use the Jacobi identities

$$[D,\partial_\mu\psi]=[D,[P_\mu,\psi]]=[[D,P_\mu],\psi]+[P_\mu,[D,\psi]]=i\{(a-1)\partial_\mu\psi+(\partial_\mu a)\psi\}\,,$$

$$[K_\nu,\partial_\mu\psi]=[K_\nu,[P_\mu,\psi]]=[[K_\nu,P_\mu],\psi]+[P_\mu,[K_\nu,\psi]]=-2i[g_{\mu\nu}D+M_{\mu\nu},\psi]+i\partial_\mu\{(bK_\mu+c\phi_\nu)\psi\}\,.$$

Using (35) in (26′) gives

$$\left(\frac{\partial W}{\partial\sigma}-2\phi^2\frac{\partial W}{\partial\phi^2}\right)\partial_\mu\psi+W(a-1)\partial_\mu\psi+W(\partial_\mu a)\psi=aW\partial_\mu\psi+(\text{terms in } X,\,Y)\,.$$

The only way to eliminate the term $W\psi$ is to put $\partial_\mu a=0$; i.e.,

$$a=\text{const}\,. \tag{28}$$

When (35) is used in (27′), $[K_\mu,\partial_\nu\psi]$ gives terms in $\partial_\nu b$ and $c\partial_\nu\phi_\mu$ to eliminate. Setting these equal to zero gives $b=\text{const}$, $c=0$. However, Eq. (10) cannot be satisfied with $b=\text{const}$ unless $b=0$, and thus Eq. (29) is true.

[5] C. J. Isham, A. Salam, and J. Strathdee, Phys. Letters **31B**, 300 (1970); John Ellis, Nucl. Phys. **B22**, 478 (1970); CERN Report No. CERN-Th-1245, 1970 (unpublished).

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# Erratum

**Quantized Fields and Particle Creation in Expanding Universes. II,** LEONARD PARKER [Phys. Rev. D **3**, 346 (1971)]. (1) On the left-hand side of Eq. (12), $A_{(a,d)}(\mathbf{p},t)$ should read $a_{(a,d)}(\mathbf{p},t)$. (2) In the bottom line of Eq. (41), the first $\delta_{\mathbf{p},\mathbf{p}'}$ should read $\delta_{a\mathbf{p},a'\mathbf{p}'}$. The final result is unchanged. (3) In the first line following Eq. (57), $D_{(a)}{}^{(-a)}$ should read $D_{(a)}{}^{(a')}$. (4) In Eq. (58), $u^{(-1,-1)}(\mathbf{p},2)$ should read $u^{(-1,-1)}(-\mathbf{p},\,2)$. (5) In Eq. (B8), replace the first $\mathbf{p}$ by $a\mathbf{p}$, and the second $\mathbf{p}$ by $a'\mathbf{p}$.