Errata

Erratum: Compton scattering. II. Differential cross sections and left-right asymmetry [Phys. Rev. D 6, 1428 (1972)]

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There is an error in the expression for M_4 on p. 1437. The third line of this expression should read

$$-\frac{4}{d}\left[\left(\frac{2\kappa^2-5\kappa+4}{(\kappa-1)^2}-\frac{(\kappa-2)^2(2\kappa^2-3\kappa+3)}{(\kappa-1)^2 d}+\frac{\kappa^2(\kappa-2)^4}{d^2(\kappa-1)^2}\right)\kappa G_0(\kappa)+(\kappa\longleftrightarrow\tau)\right].$$

Erratum: Lepton number as the fourth "color" [Phys. Rev. D 10, 275 (1974)]

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It had been suggested in this paper (Sec. VI B) that, if quarks are integer charged, the neutral members V_3 and V_8 (or their linear combinations "U^0" and "V^0") of the color octet of gluons would be produced as resonant particles in e^-e^+ annihilation. It had also been noted that if there are no color-nonsinglet states C' lighter than these gluons, then "U" and "V" would decay electromagnetically to hadrons + one photon with secondary decays to (e^-e^+) and $(\mu^-\mu^+)$ pairs and thus possess narrow widths. While the above is still true, there was an error in the deduction that $(\pi^0+\gamma)$ is the dominant decay mode. With the assumption that SU(3′) color is a good global symmetry of the hadrons (as is explicit in our approach), the amplitude for the transition "U^0" $\to$ hadrons + photon is given by the matrix element

$$\langle \text{hadrons}|J_{\text{em}}|\text{“}U^0\text{”}\rangle \propto \langle \text{hadrons}|J_{U^0}|\text{“}U^0\text{”}\rangle ,$$

where J_{U^0} is the source current of the U^0 field; since J_{U^0} is an isoscalar as well as SU(3) singlet [see Eqs. (5) and (20)], it follows that the hadrons must be in an $I=0$ state and, to the extent that SU(3) is respected, they must also be in an SU(3) singlet state. Thus we expect "U" $\to\pi^0+\gamma$ to be forbidden and "U" $\to\eta+\gamma$ to be somewhat suppressed, since η is primarily in a SU(3) octet. The decay "U" $\to X^0+\gamma$ or "U" $\to E^0+\gamma$ is allowed, depending upon whether X^0 or E^0 is the SU(3) singlet 0^- meson. Using the isospin selection rule, as mentioned above, as well as C invariance, it is easy to see that "U" $\to$ (even number of pions) $+\gamma$ is allowed but "U" $\to$ (odd number of pions) $+\gamma$ is forbidden. The decays "U" $\to$ (known hadrons) *without* a photon in the final state (such as "U" $\to\pi^+\pi^-$, $K\bar{K}$, 3π, $\rho^+\rho^-$, $K^*\bar{K}^*$, etc.) can take place through

(i) the small components ($W^3_{L,R}$ and S^0) in $\tilde{U}$ [see Eq. (20)],

(ii) emission and absorption of a virtual photon, and

(iii) breaking of color symmetry of "nonelectromagnetic" origin.

These are, therefore, not expected to be the dominant decay modes, but they may compete with the leptonic modes. In summary, the decays of "U^0" to hadrons in *association* with a single photon are expected to be its dominant decay modes, with perhaps $(X^0+\gamma)$ [or $(E^0+\gamma)$] being a significant mode. The remarks regarding decays of "U^0" also apply to the decays of "V^0", since both decay via their $\tilde{U}$ component.