Errata

Erratum: Massive-top-quark decay with emission of a photon or a gluon [Phys. Rev. D 40, 2927 (1989)]

G. Couture

The calculation of the processes $t \to bW\gamma$ and $t \to bWg$ (where g is a gluon) reported in this article contained a sign error. Equation (5) should read

$$\frac{d^2\Gamma}{dx\,dy} = \frac{\alpha^2}{8\pi \sin^2\theta_W m_2^3}\left[Q_i - \frac{Qy}{(x-y)}\right]^2 \frac{1}{xy}|V_{tb}|^2$$
$$\times \left[x^2+y^2+\frac{2(x-y)}{M_W^2}[(\Delta-y)x+(\rho-x)y]-\frac{\beta-(x-y)}{M_W^2}[3M_W^4+2M_W^2(x-y)+4(\Delta-y)(\rho-x)]\right.$$
$$+\frac{(m_1^2+m_2^2)}{M_W^2}\{2(\rho-x)(\Delta-y)+M_W^2[\beta-(x-y)]\}-\frac{\beta}{xy}(m_1^2x^2+m_2^2y^2)$$
$$\left.+\frac{2m_1^2(\Delta-y)}{M_W^2}[\Delta+(x-y)]+\frac{2m_2^2(\rho-x)}{M_W^2}[\rho-(x-y)]-\frac{2}{xyM_W^2}[x^2\rho(\Delta-y)m_1^2+y^2\Delta(\rho-x)m_2^2]\right]. \quad (5)$$

Note also the typographical error in the original expression. Equation (8) must be changed accordingly. Generally, this sign difference reduces the results by a factor 4–5, as seen in the corrected Fig. 4. One also obtains new values for Tables I and II. The branching ratios for photon emission are reduced to 0.04% and 0.2% for $m_t = 100$ and 200 GeV, respectively. Similarly, in the gluon emission, the branching ratios are 3% and 9% for similar masses.

In order to obtain the mass of the top quark through the photon energy, one calculates that $\Gamma_\gamma/\Gamma_0 = 2.34\times10^{-4}$, 2.84×10^{-4}, 3.37×10^{-4} for $m_t = 118$, 120, 122 GeV and $\delta = 16$ GeV. For a 1σ deviation, one would require 1.2×10^5 events and 2×10^6 events for a 4σ effect. Similarly, for $m_t = 198$, 200, 202 GeV and $\delta = 74$ GeV, it results $\Gamma_\gamma/\Gamma_0 = 3.7\times10^{-5}$, 4.9×10^{-5}, 6×10^{-5}. Approximately 4×10^5 events would be required for a 1σ effect and 7×10^6 for a 4σ effect.

The section regarding $|V_{tb}|$ and $|V_{ts}|$ is essentially unchanged: the ratio $\Gamma(t \to bW\gamma)/\Gamma(t \to sW\gamma)$ is reduced by 30% at $\delta = 9$ GeV and by $\sim 25\%$ at $\delta = 12$ GeV. One would still require $\delta = 13$ GeV in order to have a three-order-of-magnitude enhancement and this leaves the ratio $\Gamma(t \to sW\gamma)/\Gamma(t \to bW)$ unchanged at $\sim 3\times10^{-7}$.

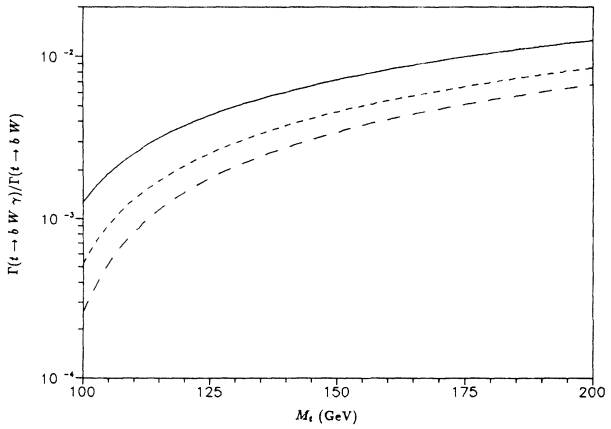

FIG. 4. $\Gamma(t \to bW\gamma)/\Gamma(t \to bW)$ as a function of m_t for three different values of δ. Solid line, $\delta = 1$ GeV; short-dashed line, $\delta = 3$ GeV; long-dashed line, $\delta = 5$ GeV.

TABLE I. $\bar{\delta}$ and Γ_γ for different values of m_t.

m_t (GeV)	$\bar{\delta}$ (GeV)	Γ_0 (MeV)	Γ_γ (MeV)	Γ_γ/Γ_0 (%)
100	4.0	80	0.03	0.04
125	11.5	400	0.3	0.08
150	17.2	900	1.0	0.11
200	27	2500	4.2	0.17

TABLE II. $\bar{\delta}$ and Γ_g for different values of m_t.

m_t (GeV)	$\bar{\delta}$ (GeV)	Γ_0 (MeV)	Γ_g (meV)	Γ_g/Γ_0 (%)
100	4.3	80	2.7	3.4
125	12	400	24	6.1
150	20	900	64	7.1
200	33	2500	220	8.9

When using the same constants, the corrected Eq. (5) can reproduce the results of V. Barger, A. Stange, and W.-Y. Keung [this issue, Phys. Rev. D **42**, 1835 (1990)].

I want to thank Mark Samuel for pointing out some discrepancies between their results [G. Tupper, J. Reid, G. Li, and M. Samuel, Oklahoma State University Report No. 231, 1989 (unpublished)] and mine.

Erratum: $\Omega^- \to \Xi^- \gamma$ and $\Omega^- \to \Xi^- l^+ l^-$ decays and the single-quark-transition model [Phys. Rev. D 37, 697 (1988)]

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MS code no. DSE412 1990 PACS number(s): 13.30.Ce, 12.40.Aa, 13.40.Hq, 99.10.+g

There is a misprint in the analytical part of Eq. (26). The correct expression for this equation is

$$^{(SQ)}\Gamma(\Omega^- \to \Xi^- \gamma) = \frac{4\alpha G^2 m}{3\pi^4 M} |\mathbf{q}|^3 F_2^2 m_s^2 = 1.32 \times 10^{-9} \text{ eV} . \tag{26}$$

The change does not affect the numerical value, which had been calculated originally with the correct formula.

Erratum: Radiative corrections to polarized Compton scattering [Phys. Rev. D 40, 2810 (1989)]

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After publication of this work, the papers by Milton, Tsai, and DeRaad[1,2] were brought to our attention. In these papers, the one-loop corrections, including soft bremsstrahlung, have been evaluated and are expressed in terms of helicity amplitudes. Their results can thus be applied to polarized Compton scattering. However, the hard bremsstrahlung, which was necessary for our calculation, was not considered in Refs. 1 or 2.

[1]K. A. Milton, W.-y Tsai, and L. L. DeRaad, Jr., Phys. Rev. D **6**, 1411 (1972).
[2]W.-y Tsai, L. L. DeRaad, Jr., and K. A. Milton, Phys. Rev. D **6**, 1428 (1972).