Calculation for T4_Vacc_Calc.pdf

last expression of section 2 (explicit form and unitarity)

$\sum_{(11)\sim(20)}$

(11): $-3\,[T_1(f), G(P_3(f,g))] - \frac{3}{2}\,[T_1(f), G_1(P_2(f))]\,T_1(g) - \frac{3}{2}\,G_1(P_2(f))\,[T_1(f), T_1(g)]$

$-3\,[T_1(f), G(P_2(f,g))]\,T_1(f) - \frac{3}{2}\,T_1(g)\,[T_1(f), G_1(P_2(f))] - \frac{3}{2}\,[T_1(f), T_1(g)]\,G_1(P_2(f))$

$-3\,T_1(f)\,[T_1(f), G(P_2(f,g))] - [T_1(f), T_1(g)]\,T_1(f)\,T_1(f)$

$-T_1(f)\,[T_1(f), T_1(g)]\,T_1(f) - T_1(f)\,T_1(f)\,[T_1(f), T_1(g)]$

(12): $-3\,[G(P_2(f)), G(P_2(f,g))] - \frac{3}{2}\,T_1(f)\,[G(P_2(f)), T_1(g)] - \frac{3}{2}\,[G(P_2(f)), T_1(f)]\,T_1(g)$

$-\frac{3}{2}\,T_1(g)\,[G(P_2(f)), T_1(f)] - \frac{3}{2}\,[G(P_2(f)), T_1(g)]\,T_1(f) - 3\,T_1(f)\,[T_1(f), G(P_2(f,g))]$

$-3\,[T_1(f), G(P_2(f,g))]\,T_1(f) - \frac{3}{2}\,T_1(f)\,T_1(f)\,[T_1(f), T_1(g)] - 3\,T_1(f)\,[T_1(f), T_1(g)]\,T_1(f)$

$-\frac{3}{2}\,[T_1(f), T_1(g)]\,T_1(f)\,T_1(f)$

(13): $-[G(P_3(f)), T_1(g)] - \frac{3}{2}\,[G_1(P_2(f)), T_1(g)]\,T_1(f)$

$-\frac{3}{2}\,G_1(P_2(f))\,[T_1(f), T_1(g)] - \frac{3}{2}\,T_1(f)\,[G(P_2(f)), T_1(g)] - \frac{3}{2}\,[T_1(f), T_1(g)]\,G(P_2(f))$

$-T_1(f)\,T_1(f)\,[T_1(f), T_1(g)] - T_1(f)\,[T_1(f), T_1(g)]\,T_1(f) - [T_1(f), T_1(g)]\,T_1(f)\,T_1(f)$

(14): $+6\,T_1(f)\,[T_1(f), G(P_2(f,g))] + 3\,T_1(f)\,T_1(f)\,[T_1(f), T_1(g)] + 3\,T_1(f)\,[T_1(f), T_1(g)]\,T_1(f)$

(15): $+6\,[T_1(f), G(P_2(f,g))]\,T_1(f) + 3\,T_1(f)\,[T_1(f), T_1(g)]\,T_1(f) + 3\,[T_1(f), T_1(g)]\,T_1(f)\,T_1(f)$

(16): $+3\,G(P_2(f))\,[T_1(f), T_1(g)] + 3\,T_1(f)\,T_1(f)\,[T_1(f), T_1(g)] + 3\left(\langle T_2\rangle(f) - \tfrac{1}{2}\,(Z_1(f)\,Z_1(f))\right)[T_1(f), T_1(g)]$

(17): $+3\,[G(P_2(f)), T_1(g)]\,T_1(f) + 3\,T_1(f)\,[T_1(f), T_1(g)]\,T_1(f) + 3\,[T_1(f), T_1(g)]\,T_1(f)\,T_1(f)$

(18): $+3\,T_1(f)\,[G(P_2(f)), T_1(g)] + 3\,T_1(f)\,T_1(f)\,[T_1(f), T_1(g)] + 3\,T_1(f)\,[T_1(f), T_1(g)]\,T_1(f)$

(19): $+3\,[T_1(f), T_1(g)]\,G(P_2(f)) + 3\,[T_1(f), T_1(g)]\,T_1(f)\,T_1(f) + 3\left(\langle T_2\rangle(f) - \tfrac{1}{2}\,(Z_1(f)\,Z_1(f))\right)[T_1(f), T_1(g)]$

(20): $-6\,T_1(f)\,T_1(f)\,[T_1(f), T_1(g)] - 6\,T_1(f)\,[T_1(f), T_1(g)]\,T_1(f) - 6\,[T_1(f), T_1(g)]\,T_1(f)\,T_1(f)$

// : −3	▯ : 0
oo : −3 ✓	— : 0
— : −1 ✓	// : 0
▯ : 6 ✓	— : $-\frac{1}{2}$
— : 0	// : 1
oo : 0	▯ : $-\frac{1}{2}$
// : 0	
△ : 0	
▯ : 0	