

$$S^{-1}(a, q, m, \mu, \lambda) =$$

$$\begin{aligned} & g^2 \frac{(-1 + N^2)}{16 N \pi^2} \left(m a_3 + m \lambda a_4 + a^2 q \text{slash} \left(-\frac{3 \imath M^8}{20 q^8} + \frac{11 \imath M^6}{80 q^6} - \frac{79 \imath M^4}{480 q^4} + \frac{9 \imath M^2}{40 q^2} + \frac{\imath M^8 \lambda}{4 q^8} - \frac{\imath M^6 \lambda}{8 q^6} - \right. \right. \\ & \quad \left. \frac{\imath M^4 \lambda}{6 q^4} - \frac{\imath M^2 \lambda}{48 q^2} + \imath a_{27} + \imath \lambda a_{28} - \frac{2 \imath M^8 C_2}{5 q^8} - \frac{31 \imath M^6 C_2}{20 q^6} - \frac{77 \imath M^4 C_2}{40 q^4} - \frac{13 \imath M^2 C_2}{20 q^2} \right) + \\ & q \text{slash} \left(\frac{\imath M^2 \lambda}{2 q^2} + \imath a_{29} + \imath \lambda a_{30} + a \left(-\frac{5 \imath m M^2 \lambda}{4 q^2} + \imath m a_{31} + \imath m \lambda a_{32} \right) + \right. \\ & a^2 \left(-\frac{9 \imath M^8}{80 q^6} - \frac{3 \imath M^6}{80 q^4} + \frac{27 \imath m^4}{16 q^2} - \frac{3 \imath m^6}{4 M^2 q^2} + \frac{3 \imath m^2 M^2}{8 q^2} + \frac{269 \imath M^4}{960 q^2} + \frac{3 \imath M^8 q^4}{8 q^{10}} - \frac{\imath M^6 q^4}{16 q^8} - \frac{5 \imath M^4 q^4}{16 q^6} + \right. \\ & \quad \frac{\imath M^2 q^4}{96 q^4} - \frac{3 \imath q^4}{160 q^2} + \frac{3 \imath M^8 \lambda}{16 q^6} - \frac{5 \imath M^6 \lambda}{32 q^4} - \frac{13 \imath m^4 \lambda}{16 q^2} + \frac{\imath m^6 \lambda}{4 M^2 q^2} + \frac{15 \imath m^2 M^2 \lambda}{8 q^2} - \frac{5 \imath M^4 \lambda}{32 q^2} - \\ & \quad \frac{5 \imath M^8 q^4 \lambda}{8 q^{10}} + \frac{7 \imath M^6 q^4 \lambda}{16 q^8} + \frac{17 \imath M^4 q^4 \lambda}{48 q^6} + \frac{3 \imath M^2 q^4 \lambda}{32 q^4} - \frac{5 \imath q^4 \lambda}{96 q^2} + \frac{15 \imath m^2 \mu^2}{16 q^2} - \frac{3 \imath m^4 \mu^2}{4 M^2 q^2} - \\ & \quad \frac{3 \imath M^2 \mu^2}{16 q^2} - \frac{9 \imath m^2 \lambda \mu^2}{16 q^2} + \frac{\imath m^4 \lambda \mu^2}{4 M^2 q^2} + \frac{5 \imath M^2 \lambda \mu^2}{16 q^2} + \imath m^2 a_{33} + \imath m^2 \lambda a_{34} + \imath \mu^2 a_{35} + \imath \lambda \mu^2 a_{36} + \\ & \quad \imath q^2 a_{37} + \imath q^2 \lambda a_{38} - e_8 \imath M^2 C_1 - \frac{\imath M^4 C_1}{4 q^2} - e_9 \imath M^2 C_2 - \frac{3 \imath M^8 C_2}{10 q^6} - \frac{19 \imath M^6 C_2}{40 q^4} - \frac{29 \imath M^4 C_2}{240 q^2} + \\ & \quad \left. \frac{\imath M^8 q^4 C_2}{q^{10}} + \frac{5 \imath M^6 q^4 C_2}{2 q^8} + \frac{11 \imath M^4 q^4 C_2}{6 q^6} + \frac{\imath M^2 q^4 C_2}{4 q^4} - \frac{\imath q^4 C_2}{20 q^2} + \imath M^2 e_2 + \imath M^2 \lambda e_6 \right) \Bigg) + \\ & \imath \mu a_9 \gamma_5 + \imath \lambda \mu a_{10} \gamma_5 + a \left(e_{10} M^2 - e_{11} M^2 \lambda + m^2 a_5 + m^2 \lambda a_6 + \mu^2 a_{15} + \lambda \mu^2 a_{16} + \right. \\ & \quad \left. q^2 a_{21} + q^2 \lambda a_{22} + \imath m \mu a_{11} \gamma_5 + \imath m \lambda \mu a_{12} \gamma_5 \right) + \\ & a^2 \left(-\frac{m M^6}{8 q^4} + \frac{3 m M^4}{16 q^2} + \frac{m M^6 q^4}{4 q^8} - \frac{3 m M^4 q^4}{8 q^6} - \frac{m M^2 q^4}{24 q^4} - \frac{13 m q^4}{48 q^2} - \frac{m M^6 \lambda}{8 q^4} + \frac{3 m M^4 \lambda}{16 q^2} + \frac{m M^6 q^4 \lambda}{4 q^8} - \right. \\ & \quad \frac{3 m M^4 q^4 \lambda}{8 q^6} - \frac{m M^2 q^4 \lambda}{24 q^4} + \frac{m q^4 \lambda}{16 q^2} + m^3 a_7 + m^3 \lambda a_8 + m \mu^2 a_{17} + m \lambda \mu^2 a_{18} + m q^2 a_{23} + m q^2 \lambda a_{24} + \\ & e_{12} m M^2 C_1 + \frac{m M^6 C_2}{2 q^4} + \frac{5 m M^4 C_2}{4 q^2} - \frac{m M^6 q^4 C_2}{q^8} - \frac{5 m M^4 q^4 C_2}{2 q^6} - \frac{11 m M^2 q^4 C_2}{6 q^4} - \frac{m q^4 C_2}{4 q^2} + \\ & m M^2 e_1 + m M^2 \lambda e_4 + m M^2 C_2 e_7 - \frac{\imath M^6 \mu \gamma_5}{8 q^4} + \frac{3 \imath M^4 \mu \gamma_5}{16 q^2} + \frac{\imath M^6 q^4 \mu \gamma_5}{4 q^8} - \frac{3 \imath M^4 q^4 \mu \gamma_5}{8 q^6} - \\ & \quad \frac{\imath M^2 q^4 \mu \gamma_5}{24 q^4} - \frac{13 \imath q^4 \mu \gamma_5}{48 q^2} - \frac{\imath M^6 \lambda \mu \gamma_5}{8 q^4} + \frac{3 \imath M^4 \lambda \mu \gamma_5}{16 q^2} + \frac{\imath M^6 q^4 \lambda \mu \gamma_5}{4 q^8} - \frac{3 \imath M^4 q^4 \lambda \mu \gamma_5}{8 q^6} - \\ & \quad \frac{\imath M^2 q^4 \lambda \mu \gamma_5}{24 q^4} + \frac{\imath q^4 \lambda \mu \gamma_5}{16 q^2} + \imath m^2 \mu a_{13} \gamma_5 + \imath m^2 \lambda \mu a_{14} \gamma_5 + \imath \mu^3 a_{19} \gamma_5 + \imath \lambda \mu^3 a_{20} \gamma_5 + \\ & \quad \imath q^2 \mu a_{25} \gamma_5 + \imath q^2 \lambda \mu a_{26} \gamma_5 + e_{13} \imath M^2 \mu C_1 \gamma_5 + \frac{\imath M^6 \mu C_2 \gamma_5}{2 q^4} + \frac{5 \imath M^4 \mu C_2 \gamma_5}{4 q^2} - \frac{\imath M^6 q^4 \mu C_2 \gamma_5}{q^8} - \\ & \quad \frac{5 \imath M^4 q^4 \mu C_2 \gamma_5}{2 q^6} - \frac{11 \imath M^2 q^4 \mu C_2 \gamma_5}{6 q^4} - \frac{\imath q^4 \mu C_2 \gamma_5}{4 q^2} + \imath M^2 \mu e_3 \gamma_5 + \imath M^2 \lambda \mu e_5 \gamma_5 + \imath M^2 \mu C_2 e_7 \gamma_5 \Bigg) + \\ & \text{Log} [a^2 M^2 + a^2 q^2] \left(\frac{3 m}{2} + \frac{m \lambda}{2} + a^2 q \text{slash} \left(\frac{101 \imath}{240} - \frac{\imath \lambda}{12} - \frac{11 \imath C_2}{60} \right) + \right. \\ & q \text{slash} \left(\frac{\imath \lambda}{2} + a \left(-\frac{3 \imath m}{4} - \frac{\imath m \lambda}{2} \right) + a^2 \left(\frac{3 \imath m^2}{4} + \frac{3 \imath M^2}{8} + \frac{59 \imath q^2}{480} + \frac{1}{2} \imath m^2 \lambda - \frac{1}{16} \imath M^2 \lambda - \right. \right. \\ & \quad \left. \left. \frac{3}{16} \imath q^2 \lambda + \frac{3}{4} \imath M^2 C_1 + \frac{1}{4} \imath q^2 C_1 + \frac{1}{2} \imath M^2 C_2 + \frac{31}{120} \imath q^2 C_2 \right) \right) + \frac{3}{2} \imath \mu \gamma_5 + \\ & \quad \left. \frac{1}{2} \imath \lambda \mu \gamma_5 + a \left(-\frac{3 m^2}{2} - \frac{3 M^2}{4} - \frac{3 q^2}{4} - \frac{m^2 \lambda}{2} + \frac{M^2 \lambda}{4} + \frac{q^2 \lambda}{2} - \frac{3}{2} \imath m \mu \gamma_5 - \frac{1}{2} \imath m \lambda \mu \gamma_5 \right) + \right. \end{aligned}$$

$$\begin{aligned}
& a^2 \left(\frac{3 m^3}{2} + \frac{7 m M^2}{4} + \frac{m q^2}{8} + \frac{m^3 \lambda}{2} - \frac{1}{4} m M^2 \lambda - \frac{3}{8} m q^2 \lambda - \frac{3}{2} m M^2 C_1 - m M^2 C_2 + \frac{3}{2} i m^2 \mu \gamma_5 + \right. \\
& \quad \left. \frac{1}{4} i M^2 \mu \gamma_5 + \frac{1}{8} i q^2 \mu \gamma_5 + \frac{1}{2} i m^2 \lambda \mu \gamma_5 - \frac{1}{8} i q^2 \lambda \mu \gamma_5 - \frac{3}{2} i M^2 \mu C_1 \gamma_5 - i M^2 \mu C_2 \gamma_5 \right) + \\
& \text{Log} \left[1 + \frac{q^2}{M^2} \right] \left(\frac{3 m M^2}{2 q^2} + \frac{m M^2 \lambda}{2 q^2} + a^2 \text{q3slash} \left(\frac{3 i M^{10}}{20 q^{10}} - \frac{i M^8}{16 q^8} + \frac{i M^6}{12 q^6} - \frac{i M^4}{8 q^4} - \frac{i M^{10} \lambda}{4 q^{10}} + \right. \right. \\
& \quad \left. \frac{i M^6 \lambda}{4 q^6} + \frac{i M^4 \lambda}{12 q^4} + \frac{2 i M^{10} C_2}{5 q^{10}} + \frac{7 i M^8 C_2}{4 q^8} + \frac{8 i M^6 C_2}{3 q^6} + \frac{3 i M^4 C_2}{2 q^4} \right) + \\
& \quad \text{qslash} \left(-\frac{i M^4 \lambda}{2 q^4} + a \left(-\frac{3 i m M^2}{4 q^2} + \frac{5 i m M^4 \lambda}{4 q^4} - \frac{i m M^2 \lambda}{4 q^2} \right) + a^2 \left(\frac{9 i M^{10}}{80 q^8} + \frac{3 i M^8}{32 q^6} + \frac{3 i m^6}{4 q^4} - \right. \right. \\
& \quad \frac{27 i m^4 M^2}{16 q^4} - \frac{3 i m^2 M^4}{8 q^4} - \frac{13 i M^6}{48 q^4} - \frac{3 i m^4}{16 q^2} + \frac{15 i m^2 M^2}{8 q^2} - \frac{3 i M^{10} q^4}{8 q^{12}} - \frac{i M^8 q^4}{8 q^{10}} + \\
& \quad \frac{3 i M^6 q^4}{8 q^8} + \frac{i M^4 q^4}{8 q^6} - \frac{3 i M^{10} \lambda}{16 q^8} + \frac{i M^8 \lambda}{16 q^6} - \frac{i m^6 \lambda}{4 q^4} + \frac{13 i m^4 M^2 \lambda}{16 q^4} - \frac{15 i m^2 M^4 \lambda}{8 q^4} + \\
& \quad \frac{i M^6 \lambda}{4 q^4} + \frac{i m^4 \lambda}{16 q^2} + \frac{5 i m^2 M^2 \lambda}{8 q^2} + \frac{i M^4 \lambda}{8 q^2} + \frac{5 i M^{10} q^4 \lambda}{8 q^{12}} - \frac{i M^8 q^4 \lambda}{8 q^{10}} - \frac{5 i M^6 q^4 \lambda}{8 q^8} - \\
& \quad \frac{5 i M^4 q^4 \lambda}{24 q^6} + \frac{3 i m^4 \mu^2}{4 q^4} - \frac{15 i m^2 M^2 \mu^2}{16 q^4} + \frac{3 i M^4 \mu^2}{16 q^4} - \frac{3 i m^2 \mu^2}{16 q^2} + \frac{3 i M^2 \mu^2}{16 q^2} - \frac{i m^4 \lambda \mu^2}{4 q^4} + \\
& \quad \frac{9 i m^2 M^2 \lambda \mu^2}{16 q^4} - \frac{5 i M^4 \lambda \mu^2}{16 q^4} + \frac{i m^2 \lambda \mu^2}{16 q^2} - \frac{i M^2 \lambda \mu^2}{16 q^2} + \frac{i M^6 C_1}{4 q^4} + \frac{3 i M^4 C_1}{4 q^2} + \frac{3 i M^{10} C_2}{10 q^8} + \\
& \quad \left. \frac{5 i M^8 C_2}{8 q^6} + \frac{i M^6 C_2}{3 q^4} + \frac{i M^4 C_2}{4 q^2} - \frac{i M^{10} q^4 C_2}{q^{12}} - \frac{3 i M^8 q^4 C_2}{q^{10}} - \frac{3 i M^6 q^4 C_2}{q^8} - \frac{i M^4 q^4 C_2}{q^6} \right) \right) + \\
& \quad \frac{3 i M^2 \mu \gamma_5}{2 q^2} + \frac{i M^2 \lambda \mu \gamma_5}{2 q^2} + a \left(-\frac{3 m^2 M^2}{q^2} - \frac{m^2 M^2 \lambda}{q^2} - \frac{M^4 \lambda}{4 q^2} - \frac{3 i m M^2 \mu \gamma_5}{q^2} - \frac{i m M^2 \lambda \mu \gamma_5}{q^2} \right) + \\
& a^2 \left(-\frac{7 m M^2}{8} + \frac{m M^8}{8 q^6} - \frac{m M^6}{8 q^4} - \frac{3 m^5}{8 q^2} + \frac{21 m^3 M^2}{4 q^2} - \frac{m M^4}{4 q^2} - \frac{m M^8 q^4}{4 q^{10}} + \frac{m M^6 q^4}{4 q^8} + \frac{m M^4 q^4}{4 q^6} + \frac{m M^2 q^4}{4 q^4} + \right. \\
& \quad \frac{3}{8} m M^2 \lambda + \frac{m M^8 \lambda}{8 q^6} - \frac{m M^6 \lambda}{8 q^4} - \frac{m^5 \lambda}{8 q^2} + \frac{7 m^3 M^2 \lambda}{4 q^2} + \frac{m M^4 \lambda}{q^2} - \frac{m M^8 q^4 \lambda}{4 q^{10}} + \frac{m M^6 q^4 \lambda}{4 q^8} + \\
& \quad \frac{m M^4 q^4 \lambda}{4 q^6} - \frac{m M^2 q^4 \lambda}{12 q^4} - \frac{3 m^3 \mu^2}{8 q^2} + \frac{3 m M^2 \mu^2}{8 q^2} - \frac{m^3 \lambda \mu^2}{8 q^2} + \frac{m M^2 \lambda \mu^2}{8 q^2} + \frac{3}{2} m M^2 C_1 + \\
& \quad \frac{1}{2} m M^2 C_2 - \frac{m M^8 C_2}{2 q^6} - \frac{3 m M^6 C_2}{2 q^4} - \frac{3 m M^4 C_2}{2 q^2} + \frac{m M^8 q^4 C_2}{q^{10}} + \frac{3 m M^6 q^4 C_2}{q^8} + \frac{3 m M^4 q^4 C_2}{q^6} + \\
& \quad \frac{m M^2 q^4 C_2}{q^4} - \frac{1}{8} i M^2 \mu \gamma_5 + \frac{i M^8 \mu \gamma_5}{8 q^6} - \frac{i M^6 \mu \gamma_5}{8 q^4} - \frac{3 i m^4 \mu \gamma_5}{8 q^2} + \frac{21 i m^2 M^2 \mu \gamma_5}{4 q^2} - \\
& \quad \frac{i M^4 \mu \gamma_5}{4 q^2} - \frac{i M^8 q^4 \mu \gamma_5}{4 q^{10}} + \frac{i M^6 q^4 \mu \gamma_5}{4 q^8} + \frac{i M^4 q^4 \mu \gamma_5}{4 q^6} + \frac{i M^2 q^4 \mu \gamma_5}{4 q^4} + \frac{1}{8} i M^2 \lambda \mu \gamma_5 + \\
& \quad \frac{i M^8 \lambda \mu \gamma_5}{8 q^6} - \frac{i M^6 \lambda \mu \gamma_5}{8 q^4} - \frac{i m^4 \lambda \mu \gamma_5}{8 q^2} + \frac{7 i m^2 M^2 \lambda \mu \gamma_5}{4 q^2} - \frac{i M^8 q^4 \lambda \mu \gamma_5}{4 q^{10}} + \frac{i M^6 q^4 \lambda \mu \gamma_5}{4 q^8} + \\
& \quad \frac{i M^4 q^4 \lambda \mu \gamma_5}{4 q^6} - \frac{i M^2 q^4 \lambda \mu \gamma_5}{12 q^4} - \frac{3 i m^2 \mu^3 \gamma_5}{8 q^2} + \frac{3 i M^2 \mu^3 \gamma_5}{8 q^2} - \frac{i m^2 \lambda \mu^3 \gamma_5}{8 q^2} + \frac{i M^2 \lambda \mu^3 \gamma_5}{8 q^2} + \\
& \quad \frac{3}{2} i M^2 \mu C_1 \gamma_5 + \frac{1}{2} i M^2 \mu C_2 \gamma_5 - \frac{i M^8 \mu C_2 \gamma_5}{2 q^6} - \frac{3 i M^6 \mu C_2 \gamma_5}{2 q^4} - \frac{3 i M^4 \mu C_2 \gamma_5}{2 q^2} + \\
& \quad \left. \frac{i M^8 q^4 \mu C_2 \gamma_5}{q^{10}} + \frac{3 i M^6 q^4 \mu C_2 \gamma_5}{q^8} + \frac{3 i M^4 q^4 \mu C_2 \gamma_5}{q^6} + \frac{i M^2 q^4 \mu C_2 \gamma_5}{q^4} \right) \right)
\end{aligned}$$