

**Erratum: Renormalization of the  $\sigma - \omega$  model within the framework of U(1) gauge symmetry  
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In Eq. (3.34), the second term should read  $\frac{1}{2}\alpha\lambda^2$ .

In Eq. (3.42), the term  $\mathcal{L}_\lambda(x)J^\mu A_\mu$  should be written as  $\mathcal{L}_\lambda(x) + J^\mu A_\mu$ .

In Eq. (3.43), the term  $\mathcal{L}_{\text{eff}}(x)J^\mu A_\mu$  should be  $\mathcal{L}_{\text{eff}}(x) + J^\mu A_\mu$ .

In Eq. (8.14), the Dirac spinor should be written as  $\left[ \frac{1}{E+M_R(\lambda)} \right]$ .

In Eq. (9.15), the last expression should be  $-\frac{[g_v^R(\lambda)]^2}{6\pi^2}F_g^v(\lambda)$  rather than  $\frac{[g_v^R(\lambda)]^2}{6\pi^2}F_g^v(\lambda)$ .

For the expression  $\eta_4^v(\lambda)$  in Eq. (9.70), the third term in the bracket should be written as  $(1 - \beta^2)^2(1 - 2\beta^2)\lambda^2$  rather than  $(1 - \beta^2)(1 - 2\beta^2)\lambda^2$ .

For the expression  $\eta_1^s(\lambda)$  in Eq. (9.73), the first term in the bracket should be  $2(1 - \beta_0^2)^3$  rather than  $2(1 - \beta_0^2)^2$ .

For the expression  $\eta_2^s(\lambda)$  in Eq. (9.73), the second term  $2(1 - \beta_0^2)$  should be replaced by  $3(1 - \beta_0^2)$ .

In Eq. (A15), the factor  $S_F(p_1 - k)$  should be  $S_F(p_1 + k)$ .

In Eq. (A16), the factor  $S_F(p_1 + q)$  should be  $S_F(p_1 + k)$ .

These errors are all typographical ones made during preparation of the manuscript. Therefore, they affect neither the numerical results that were given by the correct formulas in our working process nor the conclusions made from them.