Erratum

Erratum: Renormalization and radiative corrections at finite temperature [Phys. Rev. D 28, 340 (1983)]

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Unfortunately, in our treatment of the self-energy, Eq. (7), we neglected to expand the noncovariant terms to the next order in p^2-m^2. Thus, for example, using

$$E \cong \omega_p + \frac{1}{2\omega_p}(p^2-m^2) + \cdots \quad ,$$

where $\omega_p = (\vec{p}^{\,2}+m^2)^{1/2}$ is the physical energy, we find that in Eq. (23) the factor $1-A$ should be replaced by

$$1-A \to \left. \frac{\frac{\partial}{\partial E}(\tilde{p}^2-\tilde{m}^2)}{2E(1-A)} \right|_{E=\omega_p} ,$$

while Eq. (24) becomes

$$Z_2{}^{-1} = \left. \frac{\frac{\partial}{\partial E}(\tilde{p}^2-\tilde{m}^2)}{2E(1-A)} \right|_{E=\omega_p} ,$$

and Eq. (26) now reads

$$Z_2{}^{-1} = Z_2{}^{-1}(T=0) - \frac{\alpha}{4\pi^2}\left(I_A - \frac{1}{\omega_p} I_0 - J_A - \frac{1}{\omega_p} J_B^0 + \frac{1}{\omega_p}\frac{\partial}{\partial E} p\cdot J_B + \frac{1}{\omega_p}\frac{\partial}{\partial E} m^2 J_A \right) .$$

Likewise Eq. (35) becomes

$$Z_2 = 1 + I_A\frac{\alpha}{4\pi^2} - \frac{I_0}{\omega_p}\frac{\alpha}{4\pi^2} .$$

Also, expanding the noncovariant term I_μ,

$$I_\mu(E) = I_\mu(\omega_p) + \frac{1}{2\omega_p}(p^2-m^2)\left.\frac{\partial I_\mu}{\partial E}\right|_{E=\omega_p} + \cdots \quad ,$$

Eq. (36) becomes

$$M_{\rm SE} = -ig\bar{u}(p')\left[2\left(I_A - \frac{1}{\omega_p} I_0 \right)\frac{\alpha}{4\pi^2} + \frac{\delta m}{\not p - m} + \frac{\delta m}{\not p' + m} - \frac{\not I(p)}{2m}\frac{\alpha}{4\pi^2} - \frac{\not I(p')}{2m}\frac{\alpha}{4\pi^2} \right] v(p) .$$

Finally, Eq. (38) should read

$$``\delta\mathscr{L}" = -\frac{\alpha}{4\pi^2}\not I(p)\Big|_{\not p = m} .$$

However,

$$Z_2{}^{-1}(M_0 + M_{\rm SE} + M_{\rm CT})$$

is the same as calculated via the above-quoted procedure or via the technique quoted in the paper. Thus our calculation of the $H^0 \to e^+e^-$ decay rate at finite temperature and all of our conclusions remain unchanged.

