September 2026

ERRATA

of

Trans-Planckian Physics and Inflation: An Introduction to Renormalizable and Background-Free Quantum Gravity

(Fundamental Theories of Physics 223, Springer Nature, 2025)

by Ken-ji Hamada

- p. 3, in the footnote 3, remove κ, or let it be unity
- p.18, in the paragraph with equation (2.25): -1/15 $\mapsto$ -1/30 and 199/30 $\mapsto$ 199/60 [the value of (2.25) remains unchanged]
- p.30, in the second equation from top: $(\beta_0 \mathfrak{g}^2)^{-\frac{\beta_1}{\beta_2^2}} \mapsto (\beta_0 \mathfrak{g}^2)^{-\frac{\beta_1}{\beta_0^2}}$
- p.72, in the paragraph with equation (5.33): $-f^{ABC}A^B_{0\mu} \mapsto +f^{ABC}A^B_{0\mu}$ and $-A^A_{0\mu}T^A \mapsto +A^A_{0\mu}T^A$, and together with them the sentence "The generators of $\cdots = C_G\delta^{AB}$." is changed to "T^A is a generator of Lie group, and f^{ABC} is a structure constant defined by $[T^A, T^B] = f^{ABC}T^C$."
- p. 79, in the sentence below equation (5.48): $]/\mathfrak{g}^2)d\mu \mapsto]/\mathfrak{g}^2)/d\mu$
- p.114, in equations (7.15) and (7.16) and the sentences below them, the dot over H denotes a derivative by the proper time τ, thus $\dot{H} = Y$, $\ddot{H} = Z$, and $\dddot{H} = \partial_\tau Z$
- p.138, in equation (10.9): $M_{\rm P} \mapsto M_{\rm P}^2$
- p.148, in the second equation: $-\frac{1}{3}P_a(t)\partial_t h(k) + \frac{\partial_t \bar{\alpha}_G(t)}{\bar{\alpha}_G(t)}\left(D_t^2 h + \frac{1}{3}P_a(k)h\right) \mapsto -\frac{1}{3}P_a(k)\partial_t h(k) + \frac{\partial_t \bar{\alpha}_G(t)}{\bar{\alpha}_G(t)}\left(D_t^2 h(k) + \frac{1}{3}P_a(k)h(k)\right)$
- p.163, in the last equation: $d\varphi \wedge \theta \mapsto d\varphi \wedge d\theta$
- p.172, in the first group of equations: $\omega^{02} - \frac{1}{rf}e^2 \mapsto \omega^{02} = -\frac{1}{rf}e^2$
- p. 174, in second line of the equation (11.33): $= D^\mu D_\mu \mapsto = -D^\mu D_\mu$
- p.189, in the last paragraph: $n\,(= 1, 2)$ Ising spins $\mapsto n\,(= 0, 1, \ldots, 5)$ Ising spins
- p.215, in Useful constants for converting to natural units: $\hbar$/GeV $\mapsto \hbar c$/GeV and $\hbar$/GeV/$c \mapsto \hbar$/GeV