ERRATUM

THE VACUUM STATE IN THE HETEROTIC SUPERSTRING THEORY

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The following are corrections to errors in the published paper:

- (1) On p. 591, in line 18, printed as “anti-de Sitter” should read “de Sitter”
- (2) On p. 591, in line 18, printed as “ $\Lambda = -[18/175\zeta(3)]^{1/3}A_{\text{r}}^{-1}\kappa^{-2}$ ” should read “ $\Lambda = \{18/[337\zeta(3) + 1/2]\}^{1/3}A_{\text{r}}^{-1}\kappa^{-2}$ ”
- (3) On p. 591, in line 24, printed as “ $\Lambda^{(\text{anom})} \gtrsim -\Lambda$ ” should read “ $\Lambda^{(\text{anom})} \gtrsim \Lambda$ ”
- (4) On p. 591, in line 25, printed as “ $D = 5, 9, 10$ ” should read “ $D = 9, 10$ ”
- (5) On p. 591, in line 27, printed as “ $D = 6, 7$ ” should read “ $D = 5, 6, 7$ ”
- (6) On p. 592, in line 1, printed as “can therefore be identified with Λ (which has the)” should read “cannot be identified with Λ (which, however, has the”
- (7) On p. 596, delete lines 3 – 5.
- (8) On p. 596, in Eq. (30), printed as “ $\{-(\hat{L}_1 - 2\hat{L}_2 + \frac{1}{6}\hat{L}_3) + \frac{1}{32}[\dots]\}$ ” should read “ $\{\hat{L}_1 - 2\hat{L}_2 + \frac{1}{6}\hat{L}_3 + \frac{1}{32}[\dots]\}$ ”
- (9) On p. 598, Eq. (39) should read

$$L_{\zeta(3)}^{(4)} = \frac{1}{32}\zeta(3)A_{\text{r}}^3\alpha'^2 \left[-\frac{75}{8}\mathcal{B}^2 + \frac{178}{9}\mathcal{B}R^2 - \frac{87}{3}CR + \frac{79}{4}\mathcal{D} - \frac{65}{24}R^4 \right], \quad (39)$$

- (10) On p. 598, Eq. (41) should read

$$L_{\zeta(3)}^{(4)} = \frac{337}{288}\zeta(3)A_{\text{r}}^3\alpha'^2\Lambda^4 \quad (41)$$

*Temporary address.

(11) On p. 598, Eq. (42), printed as “ $L_t^{(4)} = \dots = -L_{\zeta(3)}^{(4)}/350\zeta(3)$ ” should read
 “ $L_t^{(4)} = \dots = L_{\zeta(3)}^{(4)}/674\zeta(3)$ ”

(12) On p. 600, Eq. (51) should read

$$\Lambda = \left[\frac{337\zeta(3) + \frac{1}{2}}{18} \right] A_r^3 \kappa^6 \Lambda^4, \quad (51)$$

(13) On p. 600, in line 17, printed as “anti-de Sitter” should read “de Sitter”

(14) On p. 600, Eq. (52) should read

$$\Lambda = 0, \quad \Lambda = \left[\frac{18}{337\zeta(3) + \frac{1}{2}} \right]^{1/3} A_r^{-1} \kappa^{-2}. \quad (52)$$

(15) On p. 600, Eq. (53) should read

$$K = \Lambda_{\mathcal{R}^{2(\text{anom})}} / \Lambda_{\mathcal{R}^4}, \quad (53)$$

(16) On p. 600, Eq. (54) should read

$$K = 8640\pi^2 \left[\frac{337\zeta(3) + \frac{1}{2}}{18} \right]^{1/3} A_r/k_2 \approx 4.8 \times 10^5/k_2. \quad (54)$$

(17) On p. 600, in line 31, printed as “ $K \approx 15$ ” should read “ $K = 16$ ”

(18) On p. 601, lines 4,5, printed as “anti-de Sitter space, $\dots$, $\dots$, is the” should read “Minkowski space is the”

(19) On p. 601, in line 6, printed as “It also resolves the paradox^{22,23}” should read “The paradox^{22,23}”

(20) On p. 601, lines 8,9, printed as “of the universe, $\dots$, $\dots$ this result” should read “of the Universe is resolved by the instability of the de Sitter-space solution (52) on the Planck time-scale t_P .” [see M. D. Pollock, *Int. J. Mod. Phys. D***15** (2006) 845; *D***22** (2013) 1392001(E)]

(21) On p. 601, in line 15, printed as “the same type of solution” should read “a de Sitter solution”

(22) On p. 601, Eq. (56) should read

$$Z(D) = D^6 - 9D^5 + 44D^4 - 126D^3 + 1,021D^2 - 2,281D + 774, \quad (56)$$

(23) On p. 601, in line 35, printed as “ $|\hat{Z}(D)| > 1$ ” should read “ $\hat{Z}(D) > 1$ ”

(24) On p. 602, Table 1 should read

Table 1. The values of $Z(D)$ and $\hat{Z}(D)$ for $D = 4 - 10$.

D	$Z(D)$	$\hat{Z}(D)$
4	6,066	
5	14,144	236.1
6	30,324	28.12
7	63,648	8.855
8	130,814	4.368
9	259,776	2.754
10	494,064	2.004

- (25) On p. 602, in lines 12,13, printed as “ $\hat{Z}(D)$ changes sign between $D = 5$ (for which the solution is anti-de Sitter) and $D = 6$,” should read “ $\hat{Z}(D)$ is positive for all $D \geq 5$,”
- (26) On p. 603, in line 17, printed as “ $D = 6, 7$ ” should read “ $D = 5, 6, 7$ ”
- (27) On p. 603, in line 19, printed as “ $|\hat{Z}(D)|$ ” should read “ $\hat{Z}(D)$ ”
- (28) On p. 603, in lines 29,30, printed as “For $D = 5$, $\tilde{Z}(D)$ is positive For $D = 6, 7$, $\tilde{Z}(D)$ is negative” should read “For $D = 5, 6, 7$, $\tilde{Z}(D)$ is negative”
- (29) On p. 605, in line 10, printed as “six or seven,” should read “five, six or seven,”
- (30) On p. 605, in lines 11,12, printed as “For the real four-dimensional universe, however,” should read “Also for the real four-dimensional Universe”
- (31) On p. 605, in lines 12,13, printed as “anti-de Sitter phase, which shows a decrease rather than an increase” should read “de Sitter phase, which shows an increase rather than a decrease”
- (32) On p. 605, in line 14, printed as “true vacuum rather than the false one.” should read “false vacuum rather than the true one.”
- (33) On p. 605, in line 16, printed as “Nordström formula⁷²” should read “mass function”
- (34) On p. 605, Eq. (72) should read

$$\mathcal{M} = 4\pi \int \rho(r)r^2 dr, \quad (72)$$

- (35) On p. 605, in line 20, printed as “anti-de Sitter” should read “de Sitter”
- (36) On p. 605, in line 22, printed as “positive pressure” should read “positive energy-density”
- (37) On p. 605, in line 22, printed as “negative energy-density” should read “negative pressure”
- (38) On p. 605, in line 25, printed as “interior anti-” should read “interior”
- (39) On p. 605, in line 27, printed as “ $8\Lambda^2/3$ ” should read “ $8\Lambda^2/3$ ”
- (40) On p. 605, in line 28, printed as “ $[175\zeta(3)/18]^{1/9}$ ” should read “ $\{[337\zeta(3) + 1/2]/18\}^{1/9}$ ”

- (41) On p. 605, in line 29, printed as “ $\rho + 3p = 2A/\kappa^2$,” should read “ $\rho = \Lambda/\kappa^2$,”
 (42) On p. 605, in line 29, printed as “ $M_N \approx \sqrt{2}M$ ” should read “ $\mathcal{M} \approx M/\sqrt{2}$ ”
 (43) On p. 605, in line 30, printed as “ A , showing that M_N ” should read “ Λ , showing that $\mathcal{M}$ ”
 (44) On p. 605, in line 32, printed as “anti-de Sitter” should read “de Sitter”
 (45) On p. 605, line 35 should read

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- (46) On p. 607, in line 16, printed as “After reduction to four dimensions, we deal with” should read “Before doing this, it is of some interest to consider”
 (47) On p. 608, Eq. (92) should read

$$\Omega' = 24\pi^2/A^2. \quad (92)$$

- (48) On p. 608, in line 4, printed as “but” should read “Now let us return to the superstring theory, for which”
 (49) On p. 608, in line 4, printed as “the equivalent of (81)” should read “(81)”
 (50) On p. 608, Eq. (93) should read

$$-\frac{R}{2\kappa^2} + L^{(4)} = \frac{3\Lambda}{\kappa^2} \quad (93)$$

- (51) On p. 608, in line 8, printed as “ $-(R - 2A)/2\kappa^2 = -A/\kappa^2$ ” should read “ $-(R + 2\Lambda)/2\kappa^2 = \Lambda/\kappa^2$ ”
 (52) On p. 608, in Eq. (94), printed as “ $\mp \frac{9}{16G_N^2\rho'_v}$,” should read “ $\pm \frac{9}{16G_N^2\rho_v}$,”
 (53) On p. 608, in line 10, printed as “Eq. (90)” should read “Eq. (81)”
 (54) On p. 608, in line 11, printed as “negative sign in the rotation (90),” should read “positive sign in the rotation (75),”
 (55) On p. 608, Eq. (95) should read

$$t = i\tau, \quad S_E = \frac{9}{16G_N^2\rho_v}. \quad (95)$$

- (56) On p. 608, in Eq. (96), printed as “ ρ'_v ” should read “ ρ_v ”
 (57) On p. 608, in line 15, printed as “ A ” should read “ Λ ”
 (58) On p. 608, Eq. (97) should read

$$S_E = 36\pi^2 \left[\frac{337\zeta(3) + 1/2}{18} \right]^{1/3} A_r \approx 2 \times 10^3 \quad (97)$$

- (59) On p. 612, in Eq. (132), printed as “ $\approx 6.81\Lambda$ ” should read “ $\approx -8.47\Lambda$ ”
 (60) On p. 613, in lines 2,3, printed as “ $\sim g^2\kappa^{-2}$ and the same sign as $\Lambda_{3/2}$.” should read “ $\sim g^2\kappa^{-2}$, but the opposite sign to that of $\Lambda_{3/2}$.”
 (61) On p. 614, lines 1–15 do not apply.
 (62) On p. 615, in lines 18,19, printed as “anti-de Sitter” should read “de Sitter”