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ERRATUM

Erratum to: Statistical Entropy of Vaidya-de Sitter Black Hole to All Orders in Planck Length

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We regret that an initially typographical error in the equations, Eq. (15) of HangBin Sun (2012), has propagated through the paper. Corrections are as follows:

$$p^2 = -\omega p_r + f p_r^2 + \frac{1}{r^2} p_\theta^2 + \frac{1}{r^2 \sin^2\theta} p_\varphi^2 = \omega p_r, \tag{15}$$

$$p^2 = \omega \frac{p_{r+} + p_{r-}}{2} = \frac{\omega^2}{f}, \tag{17}$$

$$\begin{aligned} g(\omega) &= \frac{1}{(2\pi)^3} \int e^{-\lambda p^2} \, dr \, d\theta \, d\varphi \, dp_r \, dp_\theta \, dp_\varphi \\ &= \frac{2}{(2\pi)^3} \int e^{-\lambda p^2} \, dr \, d\theta \, d\varphi \int \frac{1}{\sqrt{f}} \left(\frac{\omega^2}{f} - \frac{1}{r^2} p_\theta^2 - \frac{1}{r^2 \sin^2\theta} p_\varphi^2 \right)^{\frac{1}{2}} dp_\theta \, dp_\varphi \\ &= \frac{2\omega^3}{3\pi} \int e^{-\frac{\lambda\omega^2}{f}} \frac{r^2}{f^2} \, dr, \end{aligned} \tag{18}$$

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$$F(\beta) = \frac{1}{\beta}\int dg(\omega)\ln\bigl(1 - e^{-\beta\omega}\bigr)$$
$$= -\frac{2}{3\pi}\int e^{-\frac{\lambda\omega^2}{f}}\frac{r^2}{f^2}\,dr\int_0^\infty \frac{\omega^3\,d\omega}{e^{\beta\omega}-1}, \tag{19}$$

$$S_+ = \beta_+^2\frac{\partial F}{\partial\beta_+}$$
$$= \frac{2\beta_+^2}{3\pi}\int_{r_+}^{r_++\varepsilon_+} e^{-\frac{\lambda\omega^2}{f}}\frac{r^2}{f^2}\,dr\int_0^\infty \frac{e^{\beta_+\omega}\omega^4\,d\omega}{(e^{\beta_+\omega}-1)^2}$$
$$= \frac{2\beta_+^{-3}}{3\pi}\int_{r_+}^{r_++\varepsilon_+} e^{-\frac{\lambda\omega^2}{f}}\frac{r^2}{f^2}\,dr\int_0^\infty \frac{e^x x^4\,dx}{(e^x-1)^2}, \tag{23}$$

$$\int_{r_+}^{r_++\varepsilon_+} e^{-\frac{\lambda\omega^2}{f}}\frac{r^2}{f^2}\,dr = \int_{r_+}^{r_++\varepsilon_+}\left(-\frac{r^2}{f'}\right)\left(-\frac{1}{f^2}\right)f'e^{-\frac{\lambda\omega^2}{f}}\,dr, \tag{24}$$

$$\int_{r_+}^{r_++\varepsilon_+} e^{-\frac{\lambda\omega^2}{f}}\frac{r^2}{f^2}\,dr \approx -\frac{r_+^2}{2\kappa(1-2\dot r_+)}\int_{r_+}^{r_++\varepsilon_+}\left(-\frac{1}{f^2}\right)f'e^{-\frac{\lambda\omega^2}{f}}\,dr$$
$$= -\frac{r_+^2}{2\kappa(1-2\dot r_+)}\int_{f^{-1}(r_+)}^{f^{-1}(r_++\varepsilon_+)} e^{-\lambda\omega^2\frac{1}{f}}\,d\left(\frac{1}{f}\right)$$
$$= \frac{r_+^2}{2\kappa(1-2\dot r_+)\lambda\omega^2}e^{-\frac{\lambda\omega^2}{2\kappa(1-2\dot r_+)\varepsilon_+}}, \tag{26}$$

$$S_+ = \frac{2\beta_+^{-3}}{3\pi}\int_0^\infty \frac{r_+^2}{2\kappa(1-2\dot r_+)\lambda\omega^2}e^{-\frac{\lambda x^2}{2\kappa(1-2\dot r_+)\beta_+^2\varepsilon_+}}\frac{e^x x^4\,dx}{(e^x-1)^2}$$
$$= \frac{A_+}{24\pi^3(1-2\dot r_+)\lambda}\int_0^\infty e^{-\frac{\lambda x^2}{2\kappa(1-2\dot r_+)\beta_+^2\varepsilon_+}}\frac{e^x x^2\,dx}{(e^x-1)^2}$$
$$= \frac{C}{6\pi^3\lambda}\frac{A_+}{4}\frac{1}{1-2\dot r_+}, \tag{27}$$

$$C = \int_0^\infty e^{-\frac{\lambda x^2}{2\kappa(1-2\dot r_+)\beta_+^2\varepsilon_+}}\frac{e^x x^2\,dx}{(e^x-1)^2} \approx \int_0^\infty e^{-\frac{x^2}{2\pi^2 e}}\frac{e^x x^2\,dx}{(e^x-1)^2} \approx 2.90 \tag{28}$$

"$\lambda = \frac{C}{12\pi^3}$" below Eq. (28) should be changed into "$\lambda = \frac{C}{6\pi^3}$". Numbers following each equation are the equation numbers of HangBin Sun (2012).

The changes are minute and in no way alter the conclusions of the paper.