The Unique One-Loop Effective Action for the Six-Dimensional Einstein-Hilbert Action [Phys. Rev. Lett. 67, 422 (1991)]

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A error was made in evaluating one of the functional traces $(-U_2/2)$ which contributed to W^{div}_{unique} (the divergent part of the 1-loop corrected Vilkovisky-DeWitt effective action for 6D Einstein gravity). Resulting errors appeared in Table I and are corrected in the Table below. Correct values for off-shell trace anomalies for gravitons are:

$$\langle T_\mu{}^\mu \rangle_{ren}(M^4 \times S^2) = \frac{1}{(4\pi)^3}\left[\frac{135}{16}\Lambda^3 - \frac{63}{4}\frac{\Lambda^2}{a^2} + \frac{25}{2}\frac{\Lambda}{a^4} - \frac{2249}{840}\frac{1}{a^6}\right], \tag{23}$$

$$\langle T_\mu{}^\mu \rangle_{ren}(M^2 \times S^4) = \frac{1}{(4\pi)^3}\left[\frac{135}{16}\Lambda^3 - \frac{189}{2}\frac{\Lambda^2}{a^2} + \frac{1287}{4}\frac{\Lambda}{a^4} - \frac{20919}{56}\frac{1}{a^6}\right], \tag{24}$$

$$\langle T_\mu{}^\mu \rangle_{ren}(S^6) = \frac{1}{(4\pi)^3}\left[\frac{135}{16}\Lambda^3 - \frac{945}{4}\frac{\Lambda^2}{a^2} + \frac{7935}{4}\frac{\Lambda}{a^4} - \frac{42093}{7}\frac{1}{a^6}\right]. \tag{25}$$

Additionally, three typos appear. In equation (7), $\sqrt{-g}$ should be in the numerator, equation (14) should not have the minus sign, and in the third from the last sentence a 2 is missing $(2/\epsilon \to \ln\ \mu^2 = \ln\ L^2)$.

TABLES

TABLE I. Corrections to iW^{div}_{unique}. Column 1 is a list of 6 of the 23 invariants previously appearing in TABLE I. Errors occurred when evaluating the contribution of the functional trace of $-\frac{1}{2}U_2$ to the numerical coefficients of these 6 invariants. Corrected values for these numerical coefficients are given in column 2 and corrected values of the sums of the numerical coefficients of all 7 functional traces are given in column 3 (6 of the 7 previously given functional traces contributing to iW^{div}_{unique} were correct and are not repeated here). Numerical coefficients of the other 17 of 23 invariants were correct and are also not repeated. All terms in columns 2 and 3 have to be multiplied by $\left[\times \frac{i}{(4\pi)^3}\frac{1}{\epsilon}\int\sqrt{-g}\ d^6x\right]$

Invariant	$-\frac{1}{2}U_2$	iW^{div}_{unique}
$R^{\alpha}_{\cdot\beta}R^{\beta}_{\cdot\sigma}R^{\sigma}_{\cdot\alpha}$	$-\frac{11}{48}$	$-\frac{1433}{10{,}080}$
$RR^{\alpha\beta}R_{\alpha\beta}$	$-\frac{3}{4}$	$\frac{121}{576}$
R^3	$\frac{1}{32}$	$-\frac{79}{320}$
$\Lambda R^{\alpha\beta}R_{\alpha\beta}$	$\frac{15}{16}$	$-\frac{23}{16}$
ΛR^2	$-\frac{17}{32}$	$\frac{75}{32}$
$\Lambda^2 R$	$\frac{45}{8}$	$-\frac{63}{8}$