Erratum: Hereditary terms at next-to-leading order in two-body gravitational dynamics [Phys. Rev. D **101, 064033 (2020)]**

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It is incorrectly said that in Sec. II that A_{her} defined in Eq. (5) involves Feynman propagators. For the memory integral studied in Sec. IIIB. 5 one has actually to consider retarded (advanced) propagators for the $k, q (p)$ terms, see [1] for a discussion of Green's function boundary condition. As an additional consequence, the expression in Eq. (25) is incorrect as it has to be symmetrized (averaged) over its argument $(k_0, \mathbf{k}), (q_0, \mathbf{q}), (p_0, \mathbf{p})$, with $p \equiv -k - q$, its correct version being

$$iS_{\text{eff 5PN}}^{\mathcal{Q}^3} = -i128\pi^2 G_d^2 \int \frac{dq_0 dk_0}{2\pi} \frac{1}{2\pi} \mathcal{Q}_{ij}(k_0) \mathcal{Q}_{mn}(q_0) \mathcal{Q}_{kl}(p_0) \times \int_{\mathbf{k}, \mathbf{q}} \frac{1}{\mathbf{k}^2 - k_0^2} \frac{1}{\mathbf{p}^2 - p_0^2} \frac{1}{\mathbf{q}^2 - q_0^2} \frac{1}{3} [V^{ijmnkl}(k, q, p) + V^{ijmnkl}(p, k, q) + V^{ijmnkl}(q, p, k)], \quad (1)$$

with

$$V^{ijmnkl}(k, q, p) = \left\{ \begin{aligned} & -\frac{p_0^2 k_0^2 q_0^2}{8} \delta_{im} \delta_{jk} \delta_{ln} (-k_0 q_0 + \mathbf{k} \cdot \mathbf{q}) & \{\sigma^3\} \\ & -\frac{p_0^3 q_0 k_0^2}{4} q_n \delta_{jl} (k_k \delta_{im} - k_i \delta_{km}) & \{\sigma^2 A\} \\ & + 0 & \{\sigma^2 \phi\} \\ & -\frac{1}{4} \delta^{jl} p_0^2 k_0 k_i q_m q_n (q_0 k_k - k_0 q_k) & \{\sigma A \phi\} \\ & + \frac{1}{8} p_0^2 k_0 q_0 k_i q_m [(\mathbf{k} \cdot \mathbf{q} - k_0 q_0) \delta_{nk} \delta_{jl} + k_l q_k \delta_{nj} \\ & + \delta_{nl} (k_j q_k - k_k q_j) + \delta_{jk} (k_l q_n - k_n q_l)] & \{\sigma A^2\} \\ & -\frac{1}{8c_d} p_0^2 k_i k_j k_k q_l q_m q_n & \{\sigma \phi^2\} \\ & -\frac{1}{4} p_0^2 k_0 q_0 k_i p_k q_m (q_j \delta_{nl} - q_l \delta_{nj} + q_n \delta_{lj}) & \{A^3\} \\ & + \frac{1}{8} k_0 p_0 k_i p_k q_m q_n (\mathbf{k} \cdot \mathbf{p} \delta_{jl} + k_j p_l - k_l p_j) & \{A^2 \phi\} \\ & + \frac{1}{4c_d} k_0 p_0 k_i k_j p_k q_l q_m q_n & \{A \phi^2\} \\ & -\frac{1}{8c_d} k_0 p_0 k_i k_j p_k p_l q_m q_n \end{aligned} \right\} \quad \{\phi^3\}. \quad (2)$$

As a consequence, the numerical factors in Eqs. (26) and (27) are incorrect, the correct ones being, respectively,

$$S_{\text{eff 5PN}}^{\mathcal{Q}^3} = -\frac{G_N^2}{15} \int dt \left[\ddot{\mathcal{Q}}_{il} \ddot{\mathcal{Q}}_{jl} \mathcal{Q}_{ij} + \frac{4}{7} \ddot{\mathcal{Q}}_{il} \ddot{\mathcal{Q}}_{jl} \ddot{\mathcal{Q}}_{ij} \right], \quad (3)$$

and

$$\begin{aligned}
S_{\text{eff5PN}}^{(\text{far})} = G_N^2 \int dt \left[M \left(\frac{82}{6615} \ddot{O}_{ijk}^2 + \frac{508}{675} \ddot{J}_{ij}^2 \right) \right. \\
\left. + \frac{8}{15} \ddot{Q}_{il} \ddot{Q}_{jl} \epsilon_{ijk} L_k - \frac{1}{15} \ddot{Q}_{il} \ddot{Q}_{jl} \ddot{Q}_{ij} - \frac{4}{105} \ddot{Q}_{il} \ddot{Q}_{jl} \ddot{Q}_{ij} \right].
\end{aligned} \tag{4}$$

Conclusions are otherwise unchanged.

- [1] S. Foffa and R. Sturani, [arXiv:2103.03190](https://arxiv.org/abs/2103.03190).