

Erratum: Diffeomorphism-invariant observables and their nonlocal algebra
[Phys. Rev. D **93, 024030 (2016)]**

William Donnelly and Steven B. Giddings
 (Received 15 July 2016; published 27 July 2016)

DOI: 10.1103/PhysRevD.94.029903

Equation (69) incorrectly used the canonical momentum π^{ij} derived from the gauge-fixed action in Feynman gauge, rather than the canonical momentum derived from the ADM action. To linear order about flat spacetime, the latter is given by

$$\pi_{\text{ADM}}^{ij} = \dot{h}_{ij} - \partial_i h_{0j} - \partial_j h_{0i} - \dot{h}_{kk} \delta_{ij} + 2\partial_k h_{0k} \delta_{ij}. \quad (1)$$

The corrected equation (69) should then read

$$P_{\text{ADM}}^i = -\frac{2}{\kappa} \oint r^2 d^2\Omega \hat{r}_j \pi_{\text{ADM}}^{ij} = -\frac{2}{\kappa} \oint r^2 d^2\Omega \hat{r}^j (\dot{h}_{ij} + \partial_i h_{0j} - \partial_j h_{0i} - \dot{h}_{kk} \delta_{ij}), \quad (2)$$

where we have used the identity $\oint r^2 d^2\Omega \hat{r}^j (\partial_k h_{0k} \delta_{ij}) = \oint r^2 d^2\Omega \hat{r}^j (\partial_i h_{0j})$. The commutation relation (70) and the remainder of the paper are unaffected by this change.