```
In[◦]:= Get@FileNameJoin@{NotebookDirectory[], "SupplementalMaterials.m"};
```

```
------------------------------------------------------------
Package xAct`xPerm`  version 1.2.3, {2015, 8, 23}
CopyRight (C) 2003-2020, Jose M. Martin-Garcia, under the General Public License.
Connecting to external linux executable...
Connection established.
------------------------------------------------------------
Package xAct`xTensor`  version 1.2.0, {2021, 10, 17}
CopyRight (C) 2002-2021, Jose M. Martin-Garcia, under the General Public License.
------------------------------------------------------------
Package xAct`xPlain` version 1.0.0-developer, {2023, 5, 6}
CopyRight © 2023, Will E. V. Barker and Sebastian Zell, under the General Public License.
------------------------------------------------------------
These packages come with ABSOLUTELY NO WARRANTY; for details type
  Disclaimer[]. This is free software, and you are welcome to redistribute
  it under certain conditions. See the General Public License for details.
------------------------------------------------------------
```

Supplemental materials: Hamiltonian analysis

Introduction

How to use this document

These calculations are designed to accompany our manuscript in the form of supplemental materials, for the sake of reproducibility. Throughout, commentary by the authors takes the form of green text. Citations, where needed, will be managed by direct reference to arXiv numbers, and all such references are already provided in full within the body of our manuscript. One exception is the source referred to throughout as `Blagojević'; this pertains to the book `Gravitation and Gauge Symmetries', which is also referenced within the manuscript.

Concrete relation to manuscript: In boxes like this, we will make specific connections between a result which is obtained in the supplemental material and a claim which is made in the manuscript. These points of contact are not always numbered equations, they could be textual.

Note that a programmatical session in the Wolfram language does not really correspond to the clean flow of thoughts in a LaTeX document: there are differences that can't (and shouldn't) be ignored. Thus, whilst this document should be at least readable in standalone format, the reader is encouraged to follow it in tandem with the Wolfram language source codes, so as to avoid ambiguities. In this way, the specific operations and manipulations of quantities will become absolutely clear.

Loading HiGGS

For these calculations, we will use the HiGGS package. The version of HiGGS used for the computations here are both developer-only, and so we include copies of the sources with these supplemental materials.

```
------------------------------------------------------------

Package xAct`xPert`  version 1.0.6, {2018, 2, 28}

CopyRight (C) 2005-2020, David Brizuela, Jose M. Martin-Garcia
  and Guillermo A. Mena Marugan, under the General Public License.

** Variable $PrePrint assigned value ScreenDollarIndices

** Variable $CovDFormat changed from Prefix to Postfix

** Option AllowUpperDerivatives of ContractMetric changed from False to True

** Option MetricOn of MakeRule changed from None to All

** Option ContractMetrics of MakeRule changed from False to True

------------------------------------------------------------

Package xAct`Invar`  version 2.0.5, {2013, 7, 1}

CopyRight (C) 2006-2020, J. M. Martin-Garcia,
  D. Yllanes and R. Portugal, under the General Public License.

** DefConstantSymbol: Defining constant symbol sigma.

** DefConstantSymbol: Defining constant symbol dim.

** Option CurvatureRelations of DefCovD changed from True to False

** Variable $CommuteCovDsOnScalars changed from True to False

------------------------------------------------------------

Package xAct`xCoba`  version 0.8.6, {2021, 2, 28}

CopyRight (C) 2005-2021, David Yllanes and
  Jose M. Martin-Garcia, under the General Public License.

------------------------------------------------------------

Package xAct`SymManipulator`  version 0.9.5, {2021, 9, 14}

CopyRight (C) 2011-2021, Thomas Bäckdahl, under the General Public License.

------------------------------------------------------------
```

```
Package xAct`xTras`  version 1.4.2, {2014, 10, 30}

CopyRight (C) 2012-2014, Teake Nutma, under the General Public License.

** Variable $CovDFormat changed from Postfix to Prefix

** Option CurvatureRelations of DefCovD changed from False to True

------------------------------------------------------------

Package xAct`HiGGS`  version 2.0.0-developer, {2023, 5, 18}

CopyRight © 2022, Will E. V. Barker and Manuel Hohmann, under the General Public License.

------------------------------------------------------------

HiGGS incorporates code by Cyril Pitrou.

------------------------------------------------------------

These packages come with ABSOLUTELY NO WARRANTY; for details type
  Disclaimer[]. This is free software, and you are welcome to redistribute
  it under certain conditions. See the General Public License for details.

------------------------------------------------------------
```

The HiGGS package is now loaded. We are interested only in the computations which lead to our Fig. 3 and Fig. 5. (in the appendix) in the manuscript. Two theories are considered. To perform the Hamiltonian analysis we use the StudyTheory[] command in HiGGS, specifying the parameters of the theory. For details of this command, and for all notation used in this supplement, see arXiv:2206.00658. The results were precomputed on a desktop computer. This is because the full Hamiltonian analysis of a theory, even run on a modern desktop computer with multiple processor cores, still takes up to half an hour. Below we will display the results using the ViewTheory[] command, which takes the pre-computed binary files (.thr.mx) and formats them. If you want to re-compute the analysis locally, the few lines of code you will need are stored at the top of this (.m) file, so just un-comment them. If there are problems with the execution, please refer to the HiGGS docs, or email wb263@cam.ac.uk.

Singular spectrum without multipliers

Introductory comments

In the first instance we perform the Hamiltonian analysis of the theory without multipliers. As we know, this theory suffers from strong coupling. Accordingly, in Eq. (4) in arXiv:2205.13534 we set $\underset{1}{\hat{\alpha}_{\cdot}}$, $\underset{2}{\hat{\alpha}_{\cdot}}$, $\underset{3}{\hat{\alpha}_{\cdot}}$, $\underset{4}{\hat{\alpha}_{\cdot}}$, $\underset{6}{\hat{\alpha}_{\cdot}}$, $\mathcal{M}_{\text{Pl}}{}^2 \underset{1}{\hat{\beta}_{\cdot}}$, $\mathcal{M}_{\text{Pl}}{}^2 \underset{2}{\hat{\beta}_{\cdot}}$, $\mathcal{M}_{\text{Pl}}{}^2 \underset{3}{\bar{\beta}_{\cdot}}$, to zero, suppressing most of the higher-curvature invariants, two of the three torsion invariants, and all of the Lagrange multipliers, but allow for nonvanishing $\mathcal{M}_{\text{Pl}}{}^2 \underset{0}{\hat{\alpha}_{\cdot}}$, (Einstein-Hilbert term) $\underset{5}{\hat{\alpha}_{\cdot}}$ (Riemann-Cartan-Maxwell invariant of curvature) and $\mathcal{M}_{\text{Pl}}{}^2 \underset{3}{\hat{\beta}_{\cdot}}$.

The results of the analysis are presented below; the HiGGS output is designed to be reasonably self-explanatory, but we will nonetheless add some guiding commentary.

The first set of data are the primary constraints ϕ of the theory. These are implied by the impossibility of inverting the conjugate field-momenta for the velocities of the fields. As is now common in the PGT literature, we refer to these as `if-constraints', i.e. their existence depends on the linear relations assumed among the Lagrangian parameters.

Next, the Legendre-transformed Lagrangian is presented. This is broken into terms; the super-Hamiltonian (i.e. the coefficient $\overset{0^+}{\cdot}\mathcal{H}_b$ of the lapse function $\mathcal{N}$), the linear super-momentum (i.e. the coefficient $\overset{1^-}{\cdot}\mathcal{H}_{b\,l}$ of the shift vector) and the angular super-momentum (i.e. the antisymmetric coefficient $\overset{1^+}{\cdot}\mathcal{H}_{\mathcal{A}\,nm}$ of the timelike part of the rotational gauge field). These concepts are introduced in Blagojević.

Once the primary constraints are listed, the matrix $\{\phi, \phi\}$ of Poisson brackets between the primaries is computed. Of course, these brackets only need to be computed for the upper triangular part of the matrix. The resulting entries lie behind the red, white and yellow squares in the relevant panel of Fig. 3.

Finally, the velocities of these primaries ϕ are computed, i.e. their Poisson brackets with the super-Hamiltonian $\overset{0^+}{\cdot}\mathcal{H}_b$. These velocities serve two purposes; (i) they can be used to determine the `missing velocities' or `Hamiltonian multipliers' u (not to be confused with the geometric multipliers λ used in the manuscript), or (ii) they can define the secondary constraints of the theory. Whichever of these applies depends of course on $\{\phi, \phi\}$, according to the consistency condition.

Lists of constraints and Poisson brackets from HiGGS

Having briefly recounted the notation of arXiv:2206.00658, we make a call to the HiGGS command ViewTheory[] on the appropriate model. This command presents all the results which were pre-computed by the earlier call to StudyTheory[].

```
** DefTheory: Incorporating the binary at ConstraintAlgebraAlp0Alp5Bet3.thr.mx
```

```
** DefTheory: Found the following primary if-constraints:
```

$$\overset{0^+}{\cdot}\phi_b \equiv \frac{\overset{0^+}{\cdot}\hat{\pi}_b}{\mathcal{J}} \approx 0$$

$$\overset{1^-}{\cdot}\phi_{b\,i} \equiv \frac{\overset{1^-}{\cdot}\hat{\pi}_{b\,i}}{\mathcal{J}} \approx 0$$

$$\overset{2^+}{\cdot}\phi_{b\,i\,j} \equiv \frac{\overset{2^+}{\cdot}\hat{\pi}_{b\,i\,j}}{\mathcal{J}} \approx 0$$

$$\overset{0^+}{\cdot}\phi_{\mathcal{A}} \equiv 3\,M_{\text{Pl}}{}^2\,\hat{\alpha}_{\underset{0}{\cdot}} + \frac{\overset{0^+}{\cdot}\hat{\pi}_{\mathcal{A}}}{\mathcal{J}} \approx 0$$

$$\overset{0^-}{\cdot}\phi_{\mathcal{A}} \equiv \frac{\overset{0^-}{\cdot}\hat{\pi}_{\mathcal{A}}}{\mathcal{J}} \approx 0$$

$$\overset{2^+}{\cdot}\phi_{\mathcal{A}\,i\,j} \equiv \frac{\overset{2^+}{\cdot}\hat{\pi}_{\mathcal{A}\,i\,j}}{\mathcal{J}} \approx 0$$

$$ {}^{2^-}\phi_{\mathcal{A}ijk} \equiv \frac{2\ {}^{2^-}\hat{\pi}_{\mathcal{A}ijk}}{3\,\mathcal{J}} + \frac{{}^{2^-}\hat{\pi}_{\mathcal{A}ikj}}{3\,\mathcal{J}} - \frac{{}^{2^-}\hat{\pi}_{\mathcal{A}jki}}{3\,\mathcal{J}} \approx 0 $$

** DefTheory: Found the following primary parallel if-constraints associated with geometric multiplier momenta (if the sector is singular, the parallel constraint is taken to be the singular constraint and the identical perpendicular constraint below is dropped):

** DefTheory: Found the following primary perpendicular if-constraints associated with geometric multiplier momenta:

** DefTheory: Found the following secondary perpendicular if-constraints:

** DefTheory: Found the following secondary parallel if-constraints:

** DefTheory: Found the following secondary singular if-constraints:

** DefTheory: Defining association key $IfConstraints for the theory association ConstraintAlgebraAlp0Alp5Bet3

** ViewTheory: The super-Hamiltonian is:

$$ \begin{aligned} {}^{0^+}\mathcal{H}_b \equiv\ & \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}a}\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}}{16\,\hat{\alpha}_5\,\mathcal{J}} + \frac{{}^{1^+}\hat{\pi}_{\mathcal{A}ab}\ {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{ab}}{8\,\hat{\alpha}_5\,\mathcal{J}} + \frac{3\ {}^{1^+}\hat{\pi}_{bab}\ {}^{1^+}\hat{\pi}_{b}{}^{ab}}{16\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\beta}_3\,\mathcal{J}} + \frac{{}^{1^-}\hat{\pi}_{b}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^\parallel{}_a\mathcal{J}\right]}{\mathcal{J}} + \\ & \frac{\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\alpha}_0\,\mathcal{J}\ {}^{0^+}\mathcal{R}^\parallel}{2} - \frac{1}{2}\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\ {}^{1^-}\mathcal{R}^\parallel{}_a + {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{ab}\ {}^{1^+}\mathcal{R}^\parallel{}_{ab} + \frac{1}{6}\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\beta}_3\,\mathcal{J}\ {}^{0^-}\mathcal{T}^{\parallel 2} - {}^{1^-}\hat{\pi}_{b}{}^{a}\ {}^{1^-}\mathcal{T}^\parallel{}_a + \\ & \frac{1}{2}\ {}^{1^+}\hat{\pi}_{b}{}^{ab}\ {}^{1^+}\mathcal{T}^\parallel{}_{ab} - \frac{16}{27}\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\beta}_3\,\mathcal{J}\ {}^{2^-}\mathcal{T}^\parallel{}_{abb'}\ {}^{2^-}\mathcal{T}^{\parallel abb'} + \frac{32}{27}\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\beta}_3\,\mathcal{J}\ {}^{2^-}\mathcal{T}^\parallel{}_{ab'b}\ {}^{2^-}\mathcal{T}^{\parallel abb'} - \\ & n^a\left({}^{3}\mathcal{D}^\parallel{}_b\,{}^{1^+}\hat{\pi}_{ba}{}^{b}\right) - n^a\left({}^{3}\mathcal{D}^\parallel{}_b\,{}^{2^+}\hat{\pi}_{ba}{}^{b}\right) - \eta^\parallel{}_{ab}\left({}^{3}\mathcal{D}^{\parallel b}\,{}^{1^-}\hat{\pi}_{b}{}^{a}\right) + \frac{1}{3}\,\eta^\parallel{}_{ab}\ {}^{0^+}\hat{\pi}_b\left({}^{3}\mathcal{D}^{\parallel b}\,n^a\right) \approx 0 \end{aligned} $$

** ViewTheory: The linear super-momentum is:

$$ \begin{aligned} {}^{1^-}\mathcal{H}_{bl} \equiv\ & -\frac{1}{2}\ {}^{1^-}\hat{\pi}_{b}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^\parallel{}_a n_l\right] + \frac{{}^{1^+}\hat{\pi}_{bla}\ \underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\mathcal{J}\right]}{\mathcal{J}} + \frac{{}^{2^+}\hat{\pi}_{bla}\ \underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\mathcal{J}\right]}{\mathcal{J}} - \underset{\eta^\parallel}{\mathrm{P}}\left[\eta^{\parallel aa'}\left({}^{3}\mathcal{D}^\parallel{}_{a'}\,{}^{1^+}\hat{\pi}_{bla}\right)\right] - \\ & \underset{\eta^\parallel}{\mathrm{P}}\left[\eta^{\parallel aa'}\left({}^{3}\mathcal{D}^\parallel{}_{a'}\,{}^{2^+}\hat{\pi}_{bla}\right)\right] + \frac{{}^{0^+}\hat{\pi}_b\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^\parallel{}_l\mathcal{J}\right]}{3\,\mathcal{J}} - \frac{1}{3}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^\parallel{}_l\,{}^{0^+}\hat{\pi}_b\right] - \frac{1}{2}\ {}^{1^-}\hat{\pi}_{b}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^\parallel{}_l\,n_a\right] + \frac{1}{6}\,\epsilon^\parallel{}_{laa'}\ {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ {}^{0^-}\mathcal{R}^\parallel - \\ & \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}l}\ {}^{0^+}\mathcal{R}^\parallel}{6} - \frac{1}{2}\ {}^{1^+}\hat{\pi}_{\mathcal{A}la}\ {}^{1^-}\mathcal{R}^{\parallel a} - \frac{1}{2}\ {}^{2^+}\hat{\pi}_{\mathcal{A}la}\ {}^{1^-}\mathcal{R}^{\parallel a} + \frac{{}^{0^+}\hat{\pi}_{\mathcal{A}}\ {}^{1^-}\mathcal{R}^\parallel{}_l}{3} - \frac{4}{3}\ {}^{2^-}\hat{\pi}_{\mathcal{A}l}{}^{aa'}\ {}^{1^+}\mathcal{R}^\parallel{}_{aa'} + \\ & \frac{1}{6}\,\epsilon^\parallel{}_{laa'}\ {}^{0^-}\hat{\pi}_{\mathcal{A}}\ {}^{1^+}\mathcal{R}^{\parallel aa'} - \frac{1}{2}\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\ {}^{1^+}\mathcal{R}^\parallel{}_{la} - \frac{4}{3}\ {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ {}^{2^-}\mathcal{R}^\parallel{}_{laa'} + \frac{4}{3}\ {}^{2^+}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ {}^{2^-}\mathcal{R}^\parallel{}_{laa'} + \\ & \frac{4}{3}\ {}^{2^-}\hat{\pi}_{\mathcal{A}l}{}^{aa'}\ {}^{2^+}\mathcal{R}^\parallel{}_{aa'} - \frac{1}{2}\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\ {}^{2^+}\mathcal{R}^\parallel{}_{la} + \frac{1}{6}\,\epsilon^\parallel{}_{laa'}\ {}^{1^+}\hat{\pi}_{b}{}^{aa'}\ {}^{0^-}\mathcal{T}^\parallel - \frac{3}{2}\ {}^{1^+}\hat{\pi}_{bla}\ {}^{1^-}\mathcal{T}^{\parallel a} - \\ & \frac{3}{2}\ {}^{2^+}\hat{\pi}_{bla}\ {}^{1^-}\mathcal{T}^{\parallel a} + \frac{1}{2}\ {}^{1^-}\hat{\pi}_{b}{}^{a}\ {}^{1^+}\mathcal{T}^\parallel{}_{la} - \frac{4}{3}\ {}^{1^+}\hat{\pi}_{b}{}^{aa'}\ {}^{2^-}\mathcal{T}^\parallel{}_{laa'} + \frac{4}{3}\ {}^{2^+}\hat{\pi}_{b}{}^{aa'}\ {}^{2^-}\mathcal{T}^\parallel{}_{laa'} \approx 0 \end{aligned} $$

** ViewTheory: The 1+ part of the angular super-momentum is:

$$
\begin{aligned}
{}^{1^+}\mathcal{H}_{\mathcal{A}nm} \equiv{}& -2\,{}^{1^+}\hat{\pi}_{bmn} - \frac{\epsilon^{\parallel}{}_{mna}\,{}^{0^-}\hat{\pi}_{\mathcal{A}}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,\mathcal{J}\right]}{6\,\mathcal{J}} + \frac{4\,{}^{2^-}\hat{\pi}_{\mathcal{A}mna}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,\mathcal{J}\right]}{3\,\mathcal{J}} + \frac{1}{6}\,\epsilon^{\parallel}{}_{mna}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,{}^{0^-}\hat{\pi}_{\mathcal{A}}\right] - \\
& \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{m}\right] - \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{m}\right] + \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{n}\right] + \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{n}\right] - \\
& \frac{4}{3}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel aa'}\left({}^{3}\mathcal{D}^{\parallel}{}_{a'}\,{}^{2^-}\hat{\pi}_{\mathcal{A}mna}\right)\right] + \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}n}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,\mathcal{J}\right]}{2\,\mathcal{J}} - \frac{1}{2}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,{}^{1^-}\hat{\pi}_{\mathcal{A}n}\right] - \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,n^{a}\right] - \\
& \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,n^{a}\right] - \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}m}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,\mathcal{J}\right]}{2\,\mathcal{J}} + \frac{1}{2}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,{}^{1^-}\hat{\pi}_{\mathcal{A}m}\right] + \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,n^{a}\right] + \\
& \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,n^{a}\right] + \frac{1}{6}\,\epsilon^{\parallel}{}_{mna}\,{}^{0^-}\hat{\pi}_{\mathcal{A}}\,{}^{1^-}\mathcal{T}^{\parallel a} - \frac{4}{3}\,{}^{2^-}\hat{\pi}_{\mathcal{A}mna}\,{}^{1^-}\mathcal{T}^{\parallel a} - \frac{1}{2}\,{}^{1^-}\hat{\pi}_{\mathcal{A}n}\,{}^{1^-}\mathcal{T}^{\parallel}{}_{m} + \frac{1}{2}\,{}^{1^-}\hat{\pi}_{\mathcal{A}m}\,{}^{1^-}\mathcal{T}^{\parallel}{}_{n} - \\
& \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}n}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{ma} - \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}n}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{ma} - \frac{1}{3}\,{}^{0^+}\hat{\pi}_{\mathcal{A}}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{mn} + \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}m}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{na} + \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}m}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{na} \approx 0
\end{aligned}
$$

** ViewTheory: The on-shell brackets between the various if-constraints are:

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{b}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}\phi_{b\,l}\cdot{}^{(2)}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx$$

$$\iiint\left(-\frac{6\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\alpha}_{0}\,{}^{(1)}\mathcal{S}\,{}^{(2)}\mathcal{S}}{\mathcal{J}}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}\phi_{b\,l}\cdot{}^{(2)}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx$$

$$\iiint\frac{2\,{}^{1^+}\hat{\pi}_{b\,aa'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}^{a}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{a'}\right]}{\mathcal{J}^{2}}[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\left(-\frac{{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}_{a}\right]\ {}^{(2)}\mathcal{S}}{\mathcal{J}^2}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{2\ \epsilon\gamma_{a a' i Za1}\ {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{i Za1}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}^{a'}\right]{}^{(2)}\mathcal{S}\ n^{a}}{\mathcal{J}^2}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,l m}\cdot{}^{(2)}\mathcal{S}^{l m}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\left(3\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}^{a'}\right]\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a a'}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a' a}\right]\right)-2\ \eta^{\parallel}{}_{a' b}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}_{a}\right]\ {}^{(2)}\mathcal{S}^{a' b}\right)}{12\,\mathcal{J}^2}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,l m n}\cdot{}^{(2)}\mathcal{S}^{l m n}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{8\,\mathcal{J}^2}\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}^{a}\right]\left({}^{1^+}\hat{\pi}_{\mathcal{A}a' b}\left(-2\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a}{}^{a' b}\right]+2\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{a'}{}_{a}{}^{b}\right]+4\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{a' b}{}_{a}\right]\right)+\right.$$
$$\left.3\ {}^{1^+}\hat{\pi}_{\mathcal{A}a}{}^{a'}\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{b b'}\ {}^{(2)}\mathcal{S}_{a'}{}^{b b'}\right]-\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{b b'}\ {}^{(2)}\mathcal{S}^{b}{}_{a'}{}^{b'}\right]\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,i j}\cdot{}^{(1)}\mathcal{S}^{i j}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{b\,l m}\cdot{}^{(2)}\mathcal{S}^{l m}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}^{a a'}\right]\left({}^{1^+}\hat{\pi}_{b a' b}\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a}{}^{b}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{b}{}_{a}\right]\right)+{}^{1^+}\hat{\pi}_{b a b}\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{b}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{b}{}_{a'}\right]\right)\right)}{2\,\mathcal{J}^2}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,i j}\cdot{}^{(1)}\mathcal{S}^{i j}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,i j}\cdot{}^{(1)}\mathcal{S}^{i j}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,i j}\cdot{}^{(1)}\mathcal{S}^{i j}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,l m}\cdot{}^{(2)}\mathcal{S}^{l m}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{12\,\mathcal{J}^2}\left(3\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}\mathcal{S}^{a a'}\right]\left(2\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\underset{0}{\hat{\alpha}}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a a'}\right]+2\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\underset{0}{\hat{\alpha}}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a' a}\right]+\right.\right.$$
$$\left.{}^{1^+}\hat{\pi}_{\mathcal{A}a b}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{b}\right]+{}^{1^+}\hat{\pi}_{\mathcal{A}a' b}\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a}{}^{b}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{b}{}_{a}\right]\right)+{}^{1^+}\hat{\pi}_{\mathcal{A}a b}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{b}{}_{a'}\right]\right)-$$
$$\left.4\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\underset{0}{\hat{\alpha}}\ \eta^{\parallel}{}_{a a'}\ \eta^{\parallel}{}_{b b'}\ \mathcal{J}\ {}^{(1)}\mathcal{S}^{a a'}\ {}^{(2)}\mathcal{S}^{b b'}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,ij}\cdot{}^{(1)}\mathcal{S}^{ij}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{32\,\mathcal{J}^2}3\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\ \left(\underset{\eta^\parallel}{P}\left[{}^{(1)}\mathcal{S}^{a'}{}_{a}\right]\underset{\eta^\parallel}{P}\left[\eta^\parallel{}_{bb'}\ {}^{(2)}\mathcal{S}_{a'}{}^{bb'}\right]+2\,\underset{\eta^\parallel}{P}\left[{}^{(1)}\mathcal{S}^{a'b}\right]\left(\underset{\eta^\parallel}{P}\left[{}^{(2)}\mathcal{S}_{aa'b}\right]+\underset{\eta^\parallel}{P}\left[{}^{(2)}\mathcal{S}_{aba'}\right]-\underset{\eta^\parallel}{P}\left[{}^{(2)}\mathcal{S}_{a'ab}\right]-\underset{\eta^\parallel}{P}\left[{}^{(2)}\mathcal{S}_{baa'}\right]\right)+\right.$$

$$\underset{\eta^\parallel}{P}\left[{}^{(1)}\mathcal{S}_{a}{}^{a'}\right]\left(\underset{\eta^\parallel}{P}\left[\eta^\parallel{}_{bb'}\ {}^{(2)}\mathcal{S}_{a'}{}^{bb'}\right]-\underset{\eta^\parallel}{P}\left[\eta^\parallel{}_{bb'}\ {}^{(2)}\mathcal{S}^{b}{}_{a'}{}^{b'}\right]\right)-\underset{\eta^\parallel}{P}\left[{}^{(1)}\mathcal{S}^{a'}{}_{a}\right]\underset{\eta^\parallel}{P}\left[\eta^\parallel{}_{bb'}\ {}^{(2)}\mathcal{S}^{b}{}_{a'}{}^{b'}\right]-$$

$$\left.2\ \eta^\parallel{}_{a'b}\ \underset{\eta^\parallel}{P}\left[\eta^\parallel{}_{b'c}\ {}^{(2)}\mathcal{S}_{a}{}^{b'c}\right]\ {}^{(1)}\mathcal{S}^{a'b}+2\ \eta^\parallel{}_{a'b}\ \underset{\eta^\parallel}{P}\left[\eta^\parallel{}_{b'c}\ {}^{(2)}\mathcal{S}^{b'}{}_{a}{}^{c}\right]\ {}^{(1)}\mathcal{S}^{a'b}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}\phi_{\mathcal{A}\,ij}\cdot{}^{(1)}\mathcal{S}^{ij}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}\phi_{\mathcal{A}\,ij}\cdot{}^{(1)}\mathcal{S}^{ij}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^-}\phi_{\mathcal{A}\,ijh}\cdot{}^{(1)}\mathcal{S}^{ijh}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

```
** ViewTheory: The commutators between
   the various if-constraints and the super-Hamiltonian are:
```

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\mathcal{H}_{b}\cdot{}^{(2)}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{144\,\hat{\alpha}_{5}\,M_{Pl}{}^2\,\hat{\beta}_{3}\,\mathcal{J}^2}\,{}^{(1)}\mathcal{S}\,{}^{(2)}\mathcal{S}\left(9\,M_{Pl}{}^2\,\hat{\beta}_{3}\ {}^{1^-}\hat{\pi}_{\mathcal{A}a}\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}+18\,M_{Pl}{}^2\,\hat{\beta}_{3}\ {}^{1^+}\hat{\pi}_{\mathcal{A}aa'}\ {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{aa'}+\right.$$

$$81\,\hat{\alpha}_{5}\ {}^{1^+}\hat{\pi}_{baa'}\ {}^{1^+}\hat{\pi}_{b}{}^{aa'}-8\,\hat{\alpha}_{5}\,M_{Pl}{}^2\,\hat{\beta}_{3}\,\mathcal{J}\left(9\,M_{Pl}{}^2\,\hat{\alpha}_{0}\,\mathcal{J}\ {}^{0^+}\mathcal{R}^\parallel+9\ {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\ {}^{1^-}\mathcal{R}^\parallel{}_{a}+54\ {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ {}^{1^+}\mathcal{R}^\parallel{}_{aa'}+\right.$$

$$3\,M_{Pl}{}^2\,\hat{\beta}_{3}\,\mathcal{J}\ {}^{0^-}\mathcal{T}^{\parallel 2}-9\ {}^{1^+}\hat{\pi}_{b}{}^{aa'}\ {}^{1^+}\mathcal{T}^\parallel{}_{aa'}-32\,M_{Pl}{}^2\,\hat{\beta}_{3}\,\mathcal{J}\ {}^{2^-}\mathcal{T}^\parallel{}_{aa'Za1}\ {}^{2^-}\mathcal{T}^{\parallel\,aa'Za1}+64\,M_{Pl}{}^2\,\hat{\beta}_{3}$$

$$\left.\left.\mathcal{J}\ {}^{2^-}\mathcal{T}^\parallel{}_{aZa1a'}\ {}^{2^-}\mathcal{T}^{\parallel\,aa'Za1}+18\,\eta^{\parallel\,a'Za1}\ n^{a}\ \left({}^{3}\mathcal{D}^\parallel{}_{Za1}\ {}^{1^+}\hat{\pi}_{baa'}\right)\right)\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{1^-}\phi_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\mathcal{H}_b\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{12\,\hat{\alpha}_5\,\mathcal{J}^2}\,{}^{(2)}\mathcal{S}\Big(-\mathcal{J}\,{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\Big(\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}_a\big]\big(3M_{Pl}{}^2\hat{\alpha}_0+2\hat{\alpha}_5\,{}^{0^+}\mathcal{R}^\parallel\big)+6\hat{\alpha}_5\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{a'}\big]\,{}^{2^+}\mathcal{R}^\parallel{}_{aa'}\Big)+$$

$$2\hat{\alpha}_5\Big(12\,{}^{1^+}\hat{\pi}_{b\,aa'}\Big(\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^a\big]\underset{\eta^\parallel}{P}\big[{}^{3}\mathcal{D}^{\parallel a'}\mathcal{J}\big]+\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{a'}\big]\,{}^{1^-}\mathcal{T}^{\parallel a}\Big)-$$

$$4\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^a\big]\Big(3\underset{\eta^\parallel}{P}\big[\eta^{\parallel a'b}\,({}^{3}\mathcal{D}^\parallel{}_b\,{}^{1^+}\hat{\pi}_{b\,aa'})\big]-2\,{}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{a'b}\,{}^{2^-}\mathcal{R}^\parallel{}_{aa'b}+M_{Pl}{}^2\hat{\beta}_3\,\epsilon^\parallel{}_{aa'b}\,\mathcal{J}\,{}^{0^-}\mathcal{T}^\parallel\,{}^{1^+}\mathcal{T}^{\parallel a'b}\Big)+$$

$$\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{a'}\big]\Big(6\,{}^{1^+}\hat{\pi}_{\mathcal{A}\,aa'}\,{}^{1^-}\mathcal{R}^{\parallel a}+\epsilon\gamma_{aa'bc}\,{}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{bc}\,{}^{0^-}\mathcal{R}^\parallel\,n^a\Big)-$$

$$6\mathcal{J}\,{}^{1^+}\hat{\pi}_{b\,a}{}^{a'}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^a\big]\Big(\underset{\eta^\parallel}{P}\big[n^b\,({}^{3}\mathcal{D}^\parallel{}_{a'}\,n_b)\big]-2\big({}^{3}\mathcal{D}^\parallel{}_b\,\eta^\parallel{}_{a'}{}^{b}\big)\Big)\Big)\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,ij}\cdot{}^{(1)}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\mathcal{H}_b\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{144\,\hat{\alpha}_5\,\mathcal{J}^2}\,{}^{(2)}\mathcal{S}$$

$$\Big(3\,{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\Big(3\,{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a'}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}_{aa'}\big]-12\hat{\alpha}_5\,\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}_{aa'}\big]\,{}^{1^-}\mathcal{R}^{\parallel a'}-12\hat{\alpha}_5\,\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}_{a'a}\big]\,{}^{1^-}\mathcal{R}^{\parallel a'}-16\hat{\alpha}_5\,\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{a'b}\big]$$

$${}^{2^-}\mathcal{R}^\parallel{}_{aa'b}-16\hat{\alpha}_5\,\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{a'b}\big]\,{}^{2^-}\mathcal{R}^\parallel{}_{aba'}-\eta^\parallel{}_{a'b}\,{}^{1^-}\hat{\pi}_{\mathcal{A}\,a}\,{}^{(1)}\mathcal{S}^{a'b}+8\hat{\alpha}_5\,\eta^\parallel{}_{a'b}\,\mathcal{J}\,{}^{1^-}\mathcal{R}^\parallel{}_a\,{}^{(1)}\mathcal{S}^{a'b}\Big)+$$

$$4\Big(-9\,{}^{1^+}\hat{\pi}_{\mathcal{A}\,a}{}^{b}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{aa'}\big]\Big({}^{1^+}\hat{\pi}_{\mathcal{A}\,a'b}+2\hat{\alpha}_5\,\mathcal{J}\,{}^{2^+}\mathcal{R}^\parallel{}_{a'b}\Big)+\hat{\alpha}_5\,\mathcal{J}\underset{\eta^\parallel}{P}\big[{}^{(1)}\mathcal{S}^{aa'}\big]\Big(18\underset{\eta^\parallel}{P}\big[n^b\,({}^{3}\mathcal{D}^\parallel{}_a\,{}^{1^+}\hat{\pi}_{b\,a'b})\big]+$$

$$18\underset{\eta^\parallel}{P}\big[n^b\,({}^{3}\mathcal{D}^\parallel{}_{a'}\,{}^{1^+}\hat{\pi}_{b\,ab})\big]+9\,{}^{1^+}\hat{\pi}_{b\,ab}\underset{\eta^\parallel}{P}\big[{}^{3}\mathcal{D}^\parallel{}_{a'}\,n^b\big]+9\,{}^{1^+}\hat{\pi}_{b\,a'b}\Big(\underset{\eta^\parallel}{P}\big[{}^{3}\mathcal{D}^\parallel{}_a\,n^b\big]+\underset{\eta^\parallel}{P}\big[{}^{3}\mathcal{D}^{\parallel b}\,n_a\big]\Big)+9$$

$${}^{1^+}\hat{\pi}_{b\,ab}\underset{\eta^\parallel}{P}\big[{}^{3}\mathcal{D}^{\parallel b}\,n_{a'}\big]+36M_{Pl}{}^2\hat{\alpha}_0\,\mathcal{J}\,{}^{2^+}\mathcal{R}^\parallel{}_{aa'}-18\,{}^{1^+}\hat{\pi}_{\mathcal{A}\,a'}{}^{b}\,{}^{2^+}\mathcal{R}^\parallel{}_{ab}+9\,{}^{1^+}\hat{\pi}_{b\,a'}{}^{b}\,{}^{1^+}\mathcal{T}^\parallel{}_{ab}+9$$

$${}^{1^+}\hat{\pi}_{b\,a}{}^{b}\,{}^{1^+}\mathcal{T}^\parallel{}_{a'b}+16M_{Pl}{}^2\hat{\beta}_3\,\epsilon^\parallel{}_{a'bb'}\,\mathcal{J}\,{}^{0^-}\mathcal{T}^\parallel\,{}^{2^-}\mathcal{T}^\parallel{}_a{}^{bb'}+16M_{Pl}{}^2\hat{\beta}_3\,\epsilon^\parallel{}_{abb'}\,\mathcal{J}\,{}^{0^-}\mathcal{T}^\parallel$$

$${}^{2^-}\mathcal{T}^\parallel{}_{a'}{}^{bb'}-8M_{Pl}{}^2\hat{\beta}_3\,\epsilon^\parallel{}_{a'bb'}\,\mathcal{J}\,{}^{0^-}\mathcal{T}^\parallel\,{}^{2^-}\mathcal{T}^{\parallel bb'}{}_a-8M_{Pl}{}^2\hat{\beta}_3\,\epsilon^\parallel{}_{abb'}\,\mathcal{J}\,{}^{0^-}\mathcal{T}^\parallel\,{}^{2^-}\mathcal{T}^{\parallel bb'}{}_{a'}\Big)+$$

$$3\,\eta^\parallel{}_{aa'}\,{}^{(1)}\mathcal{S}^{aa'}\Big({}^{1^+}\hat{\pi}_{\mathcal{A}\,bb'}\,{}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{bb'}-2\hat{\alpha}_5\,\mathcal{J}\,{}^{1^+}\hat{\pi}_b{}^{bb'}\,{}^{1^+}\mathcal{T}^\parallel{}_{bb'}+4\hat{\alpha}_5\,\eta^{\parallel b'c}$$

$$\mathcal{J}\,n^b\,\big({}^{3}\mathcal{D}^\parallel{}_c\,{}^{1^+}\hat{\pi}_{b\,bb'}\big)\Big)\Big)\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\mathcal{H}_b\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{8M_{Pl}{}^2\hat{\beta}_3\,\mathcal{J}^2}\,{}^{(1)}\mathcal{S}\,{}^{(2)}\mathcal{S}\Big({}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{ab}\Big(3\,{}^{1^+}\hat{\pi}_{b\,ab}+4M_{Pl}{}^2\hat{\beta}_3\,\mathcal{J}\,{}^{1^+}\mathcal{T}^\parallel{}_{ab}\Big)+4M_{Pl}{}^2\hat{\beta}_3\,{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\Big(2\underset{\eta^\parallel}{P}\big[{}^{3}\mathcal{D}^\parallel{}_a\mathcal{J}\big]-\mathcal{J}\,{}^{1^-}\mathcal{T}^\parallel{}_a+$$

$$2\mathcal{J}\big({}^{3}\mathcal{D}^\parallel{}_b\,\eta^\parallel{}_a{}^{b}\big)\Big)-8M_{Pl}{}^2\hat{\beta}_3\,\eta^\parallel{}_{ab}\,\mathcal{J}\big({}^{3}\mathcal{D}^{\parallel b}\,{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}\big)\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{0^-}{\cdot}\phi_{\mathcal{A}}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\mathcal{H}_b\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{24\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}^2}\overset{(1)}{\cdot}\mathcal{S}\Big(24\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \epsilon^{\parallel}{}_{aa'b}\ \Big(\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a'b}\ \Big(4\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a}\,\overset{(2)}{\cdot}\mathcal{S}\Big]-4\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a}\,\mathcal{J}\Big]\overset{(2)}{\cdot}\mathcal{S}+3\,\mathcal{J}\,\overset{(2)}{\cdot}\mathcal{S}\ \overset{1^-}{\cdot}\mathcal{T}^{\parallel a}\Big)+$$

$$\mathcal{J}\,\overset{(2)}{\cdot}\mathcal{S}\Big(2\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel b}\,\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\Big]+\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \ \overset{1^+}{\cdot}\mathcal{T}^{\parallel a'b}\Big)\Big)+\overset{(2)}{\cdot}\mathcal{S}\Big(64\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \epsilon^{\parallel}{}_{a'bb'}\ \mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \ \overset{2^-}{\cdot}\mathcal{T}^{\parallel}{}_{a}{}^{bb'}-$$

$$3\Big(\epsilon\gamma_{aa'bb'}\ \Big(-\overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \Big(3\ \overset{1^+}{\cdot}\hat{\pi}_{b}{}^{bb'}+4\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\ \overset{1^+}{\cdot}\mathcal{T}^{\parallel bb'}\Big)\ n^{a'}+16\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{bb'}$$

$$\Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a'}\,\mathcal{J}\Big]\,n^{a}+\mathcal{J}\ \overset{1^-}{\cdot}\mathcal{T}^{\parallel a}\ \ n^{a'}\Big)\Big)+8\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\Big(\Big(\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\alpha}_{0}+8\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\Big)\mathcal{J}\ \overset{0^-}{\cdot}\mathcal{T}^{\parallel}-$$

$$2\ \epsilon^{\parallel}{}_{aa'b'}\ \ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \Big(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\,\eta^{\parallel bb'}\Big)\Big)\Big)\Big)\Big)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\mathcal{H}_b\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{48\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}^2}\overset{(2)}{\cdot}\mathcal{S}\Big(12\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\Big]\Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\,\overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}a'}\Big]+\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}a}\Big]+$$

$$\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,n^{b}\Big]+\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'b}\ \Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\,n^{b}\Big]+\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel b}\,n_{a}\Big]\Big)+\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel b}\,n_{a'}\Big]\Big)+$$

$$3\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'}{}^{b}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\Big]\Big(3\ \overset{1^+}{\cdot}\hat{\pi}_{bab}+16\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\ \overset{1^+}{\cdot}\mathcal{T}^{\parallel}{}_{ab}\Big)+3\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a}{}^{b}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\Big]$$

$$\Big(3\ \overset{1^+}{\cdot}\hat{\pi}_{ba'b}+16\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\ \overset{1^+}{\cdot}\mathcal{T}^{\parallel}{}_{a'b}\Big)+2\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}$$

$$\Big(4\ \eta^{\parallel}{}_{a'b}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\Big]\ \overset{(1)}{\cdot}\mathcal{S}^{a'b}-2\ \eta^{\parallel}{}_{a'b}\ \mathcal{J}\ \overset{(1)}{\cdot}\mathcal{S}^{a'b}\ \ \overset{1^-}{\cdot}\mathcal{T}^{\parallel}{}_{a}+3\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{aa'}\Big]\ \overset{1^-}{\cdot}\mathcal{T}^{\parallel a'}+3\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{a'a}\Big]\ \overset{1^-}{\cdot}\mathcal{T}^{\parallel a'}+$$

$$8\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'b}\Big]\ \overset{2^-}{\cdot}\mathcal{T}^{\parallel}{}_{aa'b}+8\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'b}\Big]\ \overset{2^-}{\cdot}\mathcal{T}^{\parallel}{}_{aba'}-6\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{a'}\Big]\Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\mathcal{J}\Big]+\mathcal{J}\Big(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\,\eta^{\parallel}{}_{a'}{}^{b}\Big)\Big)-$$

$$6\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'}{}_{a}\Big]\Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\mathcal{J}\Big]+\mathcal{J}\Big(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\,\eta^{\parallel}{}_{a'}{}^{b}\Big)\Big)+4\ \eta^{\parallel}{}_{a'b}\ \mathcal{J}\ \overset{(1)}{\cdot}\mathcal{S}^{a'b}\ \Big(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\,\eta^{\parallel}{}_{a}{}^{b'}\Big)\Big)-$$

$$2\ \eta^{\parallel}{}_{aa'}\ \ \overset{(1)}{\cdot}\mathcal{S}^{aa'}\ \Big(\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{bb'}\ \Big(3\ \overset{1^+}{\cdot}\hat{\pi}_{bbb'}+16\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\ \overset{1^+}{\cdot}\mathcal{T}^{\parallel}{}_{bb'}\Big)+4\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \eta^{\parallel}{}_{bb'}\ \mathcal{J}\Big(\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{b}\Big)\Big)\Big)\Big)[$$

$$x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}\,ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\mathcal{H}_b\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\Big(-\frac{1}{384\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}^2}\Big(192\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\ \overset{(2)}{\cdot}\mathcal{S}\Big]+384\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\ \overset{(2)}{\cdot}\mathcal{S}\Big]-18\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \ \overset{1^+}{\cdot}\hat{\pi}_{ba'b}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{a'b}\Big]\overset{(2)}{\cdot}\mathcal{S}+27\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \ \overset{1^+}{\cdot}\hat{\pi}_{ba}{}^{a'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^{\parallel}{}_{bb'}\ \ \overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{bb'}\Big]\overset{(2)}{\cdot}\mathcal{S}+$$

$$18\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \ \overset{1^+}{\cdot}\hat{\pi}_{ba'b}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}\Big]\overset{(2)}{\cdot}\mathcal{S}+36\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \ \overset{1^+}{\cdot}\hat{\pi}_{ba'b}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'b}{}_{a}\Big]\overset{(2)}{\cdot}\mathcal{S}-$$

$$27\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \ \overset{1^+}{\cdot}\hat{\pi}_{ba}{}^{a'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^{\parallel}{}_{bb'}\ \ \overset{(1)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}\Big]\overset{(2)}{\cdot}\mathcal{S}-96\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'b}\Big]\overset{(2)}{\cdot}\mathcal{S}+$$

$$36\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \delta_{a'}{}^{b}\ \mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^{\parallel}{}_{b'c}\ \ \overset{(1)}{\cdot}\mathcal{S}_{b}{}^{b'c}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\,n^{a'}\Big]\overset{(2)}{\cdot}\mathcal{S}-36\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{3}\ \delta_{a'}{}^{b}\ \mathcal{J}$$

$$\overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}^{b'}{}_{b}{}^{c}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a}\, n^{a'}\Big]\overset{(2)}{\cdot}\mathcal{S} - 96\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\,\mathcal{J}\Big]\overset{(2)}{\cdot}\mathcal{S} +$$

$$96\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab}\Big]\overset{(2)}{\cdot}\mathcal{S} + 72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{a'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\, n_{b}\Big]\overset{(2)}{\cdot}\mathcal{S} -$$

$$72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\, n_{b}\Big]\overset{(2)}{\cdot}\mathcal{S} + 36\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{bb'}\ \overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{bb'}\Big]$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a'}\ n_{a}\Big]\overset{(2)}{\cdot}\mathcal{S} - 36\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{bb'}\ \overset{(1)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a'}\ n_{a}\Big]\overset{(2)}{\cdot}\mathcal{S} -$$

$$192\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\,\mathcal{J}\Big]\overset{(2)}{\cdot}\mathcal{S} + 192\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}aa'}\Big]\overset{(2)}{\cdot}\mathcal{S} +$$

$$72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{a'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\, n_{a'}\Big]\overset{(2)}{\cdot}\mathcal{S} - 72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\, n_{a'}\Big]\overset{(2)}{\cdot}\mathcal{S} -$$

$$144\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{a'b}\ \overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^{\parallel b'c}\ \Big(\overset{3}{\cdot}\mathcal{D}^\parallel{}_{c}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab'}\Big)\Big]\overset{(2)}{\cdot}\mathcal{S} + 144\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{ab}\ \overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^{\parallel b'c}\ \Big(\overset{3}{\cdot}\mathcal{D}^\parallel{}_{c}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'b'}\Big)\Big]\overset{(2)}{\cdot}\mathcal{S} - 16\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \epsilon^\parallel{}_{a'bb'}\ \mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a}{}^{b'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{0^-}{\cdot}\mathcal{T}^\parallel +$$

$$16\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \epsilon^\parallel{}_{abb'}\ \mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'}{}^{b'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{0^-}{\cdot}\mathcal{T}^\parallel + 32\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \epsilon^\parallel{}_{aa'b'}\ \mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}b}{}^{b'}$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{0^-}{\cdot}\mathcal{T}^\parallel - 24\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \epsilon^\parallel{}_{aa'}{}^{b}\ \mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}_{b}{}^{b'c}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{0^-}{\cdot}\mathcal{T}^\parallel +$$

$$24\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \epsilon^\parallel{}_{aa'}{}^{b}\ \mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}^{b'}{}_{b}{}^{c}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{0^-}{\cdot}\mathcal{T}^\parallel + 72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a}{}^{a'}$$

$$\Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{bb'}\ \overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{bb'}\Big] - \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{bb'}\ \overset{(1)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}\Big]\Big)\Big(4\,\mathcal{J}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a}\ \overset{(2)}{\cdot}\mathcal{S}\Big] - 2\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{3}{\cdot}\mathcal{D}^{\parallel a}\,\mathcal{J}\Big]\overset{(2)}{\cdot}\mathcal{S} + \mathcal{J}\ \overset{(2)}{\cdot}\mathcal{S}\ \overset{1^-}{\cdot}\mathcal{T}^{\parallel a}\Big) +$$

$$256\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\alpha}_{\underset{0}{\cdot}}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}^{2}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{aa'b} + 128\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\alpha}_{\underset{0}{\cdot}}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}^{2}$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{aba'} - 192\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}_{b}{}^{b'c}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{a}{}^{b}{}_{a'} +$$

$$192\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}^{b'}{}_{b}{}^{c}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{a}{}^{b}{}_{a'} + 128\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}b}{}^{b'}$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{ab'a'} + 256\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'}{}^{b'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{ab'b} -$$

$$128\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\alpha}_{\underset{0}{\cdot}}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}^{2}\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{a'ba} - 128\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}b}{}^{b'}$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{a'b'a} - 256\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a}{}^{b'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{a'b'b} +$$

$$128\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'}{}^{b'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{bb'a} - 128\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a}{}^{b'}$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\Big]\overset{(2)}{\cdot}\mathcal{S}\ \overset{2^-}{\cdot}\mathcal{T}^\parallel{}_{bb'a'} + 144\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{b'c}\Big]\overset{(2)}{\cdot}\mathcal{S}\Big(\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\ \eta^\parallel{}_{a}{}^{b}\Big) -$$

$$144\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\,\mathcal{J}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{aa'}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}^{b'}{}_{a'}{}^{c}\Big]\overset{(2)}{\cdot}\mathcal{S}\Big(\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\ \eta^\parallel{}_{a}{}^{b}\Big) - 72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \eta^\parallel{}_{a'b}\ \mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}$$

$$\underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}_{a}{}^{b'c}\Big]\overset{(2)}{\cdot}\mathcal{S}\Big(\overset{3}{\cdot}\mathcal{D}^{\parallel b}\ n^{a'}\Big) + 72\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \eta^\parallel{}_{a'b}\ \mathcal{J}\ \overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^\parallel}{\mathrm{P}}\Big[\eta^\parallel{}_{b'c}\ \overset{(1)}{\cdot}\mathcal{S}^{b'}{}_{a}{}^{c}\Big]\overset{(2)}{\cdot}\mathcal{S}\Big(\overset{3}{\cdot}\mathcal{D}^{\parallel b}\ n^{a'}\Big) -$$

$$48\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{\underset{3}{\cdot}}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'b}\ \Big(\mathcal{J}\Big(\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{a'b}\Big] - \underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}\Big] - 2\,\underset{\eta^\parallel}{\mathrm{P}}\Big[\overset{(1)}{\cdot}\mathcal{S}^{a'b}{}_{a}\Big]\Big)\overset{(2)}{\cdot}\mathcal{S}\ \overset{1^-}{\cdot}\mathcal{T}^{\parallel a} +$$

$$2\, \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}_{\cdot}\mathcal{S}^{\mathrm{a a' b}}\right]\left(2\mathcal{J}\, \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{\mathrm{a}}\, {}^{(2)}_{\cdot}\mathcal{S}\right] - \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{\mathrm{a}}\mathcal{J}\right] {}^{(2)}_{\cdot}\mathcal{S} + \mathcal{J}\, {}^{(2)}_{\cdot}\mathcal{S}\left({}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{\mathrm{b'}}\, \eta^{\parallel}{}_{\mathrm{a}}{}^{\mathrm{b'}}\right)\right)\Bigg) +$$

$$96\, \mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{3}{\hat{\beta}_{\cdot}}\, \mathcal{J}\, {}^{1^{+}}_{\cdot}\hat{\pi}_{\mathcal{A}\mathrm{ab}}\, \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}_{\cdot}\mathcal{S}^{\mathrm{a a' b}}\right] {}^{(2)}_{\cdot}\mathcal{S}\left({}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{\mathrm{b'}}\, \eta^{\parallel}{}_{\mathrm{a'}}{}^{\mathrm{b'}}\right) + 192\, \mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{3}{\hat{\beta}_{\cdot}}\, \mathcal{J}\, {}^{1^{+}}_{\cdot}\hat{\pi}_{\mathcal{A}\mathrm{aa'}}$$

$$\underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(1)}_{\cdot}\mathcal{S}^{\mathrm{a a' b}}\right] {}^{(2)}_{\cdot}\mathcal{S}\left({}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{\mathrm{b'}}\, \eta^{\parallel}{}_{\mathrm{b}}{}^{\mathrm{b'}}\right)\Bigg)\Bigg)[x^{0}, x^{1}, x^{2}, x^{3}]\, dx^{3}\, dx^{2}\, dx^{1}$$

This concludes the HiGGS output.

Concrete relation to manuscript: The above constraints and Poisson brackets constitute the data represented by coloured squares in the left-hand panel of Fig. 2 in our Manuscript. The primary constraints ϕ are listed along the top row. The primary Poisson brackets $\{\phi,\ \phi\}$ are used to infer the white, red or yellow squares in the matrix depending on whether they are vanishing, or appear only in proportion to phase space variables, or are order unity (e.g. proportional to the metric or unit-timelike vector). The $\{\phi,\ {}^{0^{+}}_{\cdot}\mathcal{H}_{b}\}$ Poisson brackets define the secondary constraints "χ", which appear on the sides of the matrix. Most of the Poisson brackets $\{\chi,\ \phi\}$ need not be computed (grey squares), but it can be noticed without detailed calculation that the remaining required brackets (yellow squares) do indeed arise, and that these determine all the missing velocities and so terminate the Dirac algorithm.

Healthy spectrum with multipliers

Introductory comments

We now turn to the case in which multipliers have been applied. This time we set $\underset{1}{\hat{\alpha}_{\cdot}}, \underset{2}{\hat{\alpha}_{\cdot}}, \underset{3}{\hat{\alpha}_{\cdot}}, \underset{4}{\hat{\alpha}_{\cdot}}, \underset{6}{\hat{\alpha}_{\cdot}}$, $\mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{1}{\hat{\beta}_{\cdot}}, \mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{2}{\hat{\beta}_{\cdot}}, \mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{3}{\bar{\beta}_{\cdot}}$, to zero, and allow for nonvanishing $\mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{0}{\hat{\alpha}_{\cdot}}, \underset{5}{\hat{\alpha}_{\cdot}}$ and $\mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{3}{\hat{\beta}_{\cdot}}$, but we also admit $\mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{1}{\bar{\beta}_{\cdot}}$ and $\mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{2}{\bar{\beta}_{\cdot}}$. These final two couplings switch on the multipliers in the Lagrangian.

Note this time that because some of the Lagrange multiplier fields are present, certain secondary constraints can be anticipated by HiGGS a priori: this is in accordance with the theory set out in arXiv:2205.13534.

Lists of constraints and Poisson brackets from HiGGS

We will again present the results using the ViewTheory[] command.

```
** DefTheory: Incorporating the binary at ConstraintAlgebraAlp0Alp5Bet3cBet1cBet2.thr.mx
```

```
** DefTheory: Found the following primary if-constraints:
```

$${}^{0^{+}}_{\cdot}\phi_{b} \equiv \frac{{}^{0^{+}}_{\cdot}\hat{\pi}_{b}}{\mathcal{J}} + 2\, \mathcal{M}_{\mathrm{Pl}}{}^{2}\, \underset{2}{\bar{\beta}_{\cdot}}\, {}^{0^{+}}_{\cdot}\lambda^{\perp}_{\mathcal{T}} \approx 0$$

$$ {}^{1^-}\phi_{b\,i} \equiv \frac{{}^{1^-}\hat{\pi}_{b\,i}}{\mathcal{J}} - \frac{2}{3}\left(\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1} - \mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\right) {}^{1^-}\lambda^{\parallel}_{\mathcal{T}\,i} + \frac{2}{3}\left(2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1} + \mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\right) {}^{1^-}\lambda^{\perp}_{\mathcal{T}\,i} \approx 0 $$

$$ {}^{2^+}\phi_{b\,i\,j} \equiv \frac{{}^{2^+}\hat{\pi}_{b\,i\,j}}{\mathcal{J}} + 2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{2^+}\lambda^{\perp}_{\mathcal{T}\,i\,j} \approx 0 $$

$$ {}^{0^+}\phi_{\mathcal{A}} \equiv 3\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\alpha}_{0} + \frac{{}^{0^+}\hat{\pi}_{\mathcal{A}}}{\mathcal{J}} \approx 0 $$

$$ {}^{0^-}\phi_{\mathcal{A}} \equiv \frac{{}^{0^-}\hat{\pi}_{\mathcal{A}}}{\mathcal{J}} \approx 0 $$

$$ {}^{2^+}\phi_{\mathcal{A}\,i\,j} \equiv \frac{{}^{2^+}\hat{\pi}_{\mathcal{A}\,i\,j}}{\mathcal{J}} \approx 0 $$

$$ {}^{2^-}\phi_{\mathcal{A}\,i\,j\,\hbar} \equiv \frac{2\,{}^{2^-}\hat{\pi}_{\mathcal{A}\,i\,j\,\hbar}}{3\,\mathcal{J}} + \frac{{}^{2^-}\hat{\pi}_{\mathcal{A}\,i\,\hbar\,j}}{3\,\mathcal{J}} - \frac{{}^{2^-}\hat{\pi}_{\mathcal{A}\,j\,\hbar\,i}}{3\,\mathcal{J}} \approx 0 $$

** DefTheory: Found the following primary parallel if-constraints associated with geometric multiplier momenta (if the sector is singular, the parallel constraint is taken to be the singular constraint and the identical perpendicular constraint below is dropped):

$$ {}^{1^+}\varphi^{\parallel}_{b\,i\,j} \equiv -\frac{2}{3}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{1^+}\varpi^{\parallel}_{\mathcal{T}\,i\,j} + \frac{2}{3}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{1^+}\varpi^{\perp}_{\mathcal{T}\,i\,j} \approx 0 $$

$$ {}^{1^-}\varphi^{\parallel}_{b\,i} \equiv \frac{1}{3}\left(-\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1} - 2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\right) {}^{1^-}\varpi^{\parallel}_{\mathcal{T}\,i} + \frac{2}{3}\left(\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1} - \mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\right) {}^{1^-}\varpi^{\perp}_{\mathcal{T}\,i} \approx 0 $$

$$ {}^{2^-}\varphi^{\parallel}_{b\,i\,j\,\hbar} \equiv -\frac{2}{3}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{2^-}\varpi^{\parallel}_{\mathcal{T}\,i\,j\,\hbar} - \frac{1}{3}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{2^-}\varpi^{\parallel}_{\mathcal{T}\,i\,\hbar\,j} + \frac{1}{3}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{2^-}\varpi^{\parallel}_{\mathcal{T}\,j\,\hbar\,i} \approx 0 $$

** DefTheory: Found the following primary perpendicular if-constraints associated with geometric multiplier momenta:

$$ {}^{0^+}\varphi^{\perp}_{b} \equiv 2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\,{}^{0^+}\varpi^{\perp}_{\mathcal{T}} \approx 0 $$

$$ {}^{1^-}\varphi^{\perp}_{b\,i} \equiv -\frac{2}{3}\left(\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1} - \mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\right) {}^{1^-}\varpi^{\parallel}_{\mathcal{T}\,i} + \frac{2}{3}\left(2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1} + \mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{2}\right) {}^{1^-}\varpi^{\perp}_{\mathcal{T}\,i} \approx 0 $$

$$ {}^{2^+}\varphi^{\perp}_{b\,i\,j} \equiv 2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\,{}^{2^+}\varpi^{\perp}_{\mathcal{T}\,i\,j} \approx 0 $$

** DefTheory: Found the following secondary perpendicular if-constraints:

** DefTheory: Found the following secondary parallel if-constraints:

$$ {}^{1^-}\chi^{\parallel}_{b\,i} \equiv {}^{1^-}\mathcal{T}^{\parallel}{}_{i} \approx 0 $$

$$ {}^{2^-}\chi^{\parallel}_{b\,i\,j\,\hbar} \equiv {}^{2^-}\mathcal{T}^{\parallel}{}_{i\,j\,\hbar} \approx 0 $$

** DefTheory: Found the following secondary singular if-constraints:

$$ {}^{1^+}\chi_{b\,ij} \equiv \frac{{}^{1^+}\hat{\pi}_{b\,ij}}{\mathcal{J}} - \frac{2}{3} M_{Pl}^2 \bar{\beta}_1 \, {}^{1^+}\lambda^{\parallel}_{\mathcal{T}\,ij} + \frac{2}{3} M_{Pl}^2 \bar{\beta}_1 \, {}^{1^+}\lambda^{\perp}_{\mathcal{T}\,ij} + 4 M_{Pl}^2 \hat{\beta}_3 \, {}^{1^+}\mathcal{T}^{\parallel}{}_{ij} \approx 0 $$

** DefTheory: Defining association key $IfConstraints
for the theory association ConstraintAlgebraAlp0Alp5Bet3cBet1cBet2

** ViewTheory: The super-Hamiltonian is:

$$ {}^{0^+}\mathcal{H}_b \equiv \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}a}\,{}^{1^-}\hat{\pi}_{\mathcal{A}}{}^{a}}{16\hat{\alpha}_5\mathcal{J}} + \frac{{}^{1^+}\hat{\pi}_{\mathcal{A}ab}\,{}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{ab}}{8\hat{\alpha}_5\mathcal{J}} + \frac{3\,{}^{1^+}\hat{\pi}_{bab}\,{}^{1^+}\hat{\pi}_b{}^{ab}}{16 M_{Pl}^2\hat{\beta}_3\mathcal{J}} + \frac{{}^{1^-}\hat{\pi}_b{}^a \, \underset{\eta^\parallel}{P}[{}^{3}\mathcal{D}^\parallel{}_a\mathcal{J}]}{\mathcal{J}} + \frac{M_{Pl}^2\hat{\alpha}_0\mathcal{J}\,{}^{0^+}\mathcal{R}^\parallel}{2} - $$

$$ \frac12 {}^{1^-}\hat{\pi}_{\mathcal{A}}{}^a\,{}^{1^-}\mathcal{R}^\parallel{}_a + {}^{1^+}\hat{\pi}_{\mathcal{A}}{}^{ab}\,{}^{1^+}\mathcal{R}^\parallel{}_{ab} - \frac{M_{Pl}^2\bar\beta_1\,{}^{1^+}\hat\pi_b{}^{ab}\,{}^{1^+}\lambda^\parallel_{\mathcal{T}ab}}{4M_{Pl}^2\hat\beta_3} + \frac{M_{Pl}^2\bar\beta_1^2\mathcal{J}\,{}^{1^+}\lambda^\parallel_{\mathcal{T}ab}\,{}^{1^+}\lambda^{\parallel ab}_{\mathcal{T}}}{12M_{Pl}^2\hat\beta_3} + $$

$$ \frac{M_{Pl}^2\bar\beta_1\,{}^{1^+}\hat\pi_b{}^{ab}\,{}^{1^+}\lambda^\perp_{\mathcal{T}ab}}{4M_{Pl}^2\hat\beta_3} - \frac{M_{Pl}^2\bar\beta_1^2\mathcal{J}\,{}^{1^+}\lambda^{\parallel ab}_{\mathcal{T}}\,{}^{1^+}\lambda^\perp_{\mathcal{T}ab}}{6M_{Pl}^2\hat\beta_3} + \frac{M_{Pl}^2\bar\beta_1^2\mathcal{J}\,{}^{1^+}\lambda^\perp_{\mathcal{T}ab}\,{}^{1^+}\lambda^{\perp ab}_{\mathcal{T}}}{12M_{Pl}^2\hat\beta_3} + \frac16 M_{Pl}^2\hat\beta_3\mathcal{J}\,{}^{0^-}\mathcal{T}^{\parallel 2} - $$

$$ {}^{1^-}\hat\pi_b{}^a\,{}^{1^-}\mathcal{T}^\parallel{}_a + \frac12{}^{1^+}\hat\pi_b{}^{ab}\,{}^{1^+}\mathcal{T}^\parallel{}_{ab} - M_{Pl}^2\bar\beta_1\mathcal{J}\,{}^{1^+}\lambda^{\parallel ab}_{\mathcal{T}}\,{}^{1^+}\mathcal{T}^\parallel{}_{ab} + M_{Pl}^2\bar\beta_1\mathcal{J}\,{}^{1^+}\lambda^{\perp ab}_{\mathcal{T}}\,{}^{1^+}\mathcal{T}^\parallel{}_{ab} - $$

$$ n^a\left({}^3\mathcal{D}^\parallel{}_b\,{}^{1^+}\hat\pi_{b\,a}{}^b\right) - n^a\left({}^3\mathcal{D}^\parallel{}_b\,{}^{2^+}\hat\pi_{b\,a}{}^b\right) - \eta^\parallel{}_{ab}\left({}^3\mathcal{D}^{\parallel b}\,{}^{1^-}\hat\pi_b{}^a\right) + \frac13\eta^\parallel{}_{ab}\,{}^{0^+}\hat\pi_b\left({}^3\mathcal{D}^{\parallel b} n^a\right) \approx 0 $$

** ViewTheory: The linear super-momentum is:

$$ {}^{1^-}\mathcal{H}_{b\,l} \equiv -\frac12{}^{1^-}\hat\pi_b{}^a\,\underset{\eta^\parallel}{P}[{}^3\mathcal{D}^\parallel{}_a n_l] + \frac{{}^{1^+}\hat\pi_{b\,la}\,\underset{\eta^\parallel}{P}[{}^3\mathcal{D}^{\parallel a}\mathcal{J}]}{\mathcal{J}} + \frac{{}^{2^+}\hat\pi_{b\,la}\,\underset{\eta^\parallel}{P}[{}^3\mathcal{D}^{\parallel a}\mathcal{J}]}{\mathcal{J}} - \underset{\eta^\parallel}{P}[\eta^{\parallel aa'}({}^3\mathcal{D}^\parallel{}_{a'}\,{}^{1^+}\hat\pi_{b\,la})] - $$

$$ \underset{\eta^\parallel}{P}[\eta^{\parallel aa'}({}^3\mathcal{D}^\parallel{}_{a'}\,{}^{2^+}\hat\pi_{b\,la})] + \frac{{}^{0^+}\hat\pi_b\,\underset{\eta^\parallel}{P}[{}^3\mathcal{D}^\parallel{}_l\mathcal{J}]}{3\mathcal{J}} - \frac13\underset{\eta^\parallel}{P}[{}^3\mathcal{D}^\parallel{}_l\,{}^{0^+}\hat\pi_b] - \frac12{}^{1^-}\hat\pi_b{}^a\,\underset{\eta^\parallel}{P}[{}^3\mathcal{D}^\parallel{}_l n_a] + \frac16\epsilon^\parallel{}_{laa'}\,{}^{1^+}\hat\pi_{\mathcal{A}}{}^{aa'}\,{}^{0^-}\mathcal{R}^\parallel - $$

$$ \frac{{}^{1^-}\hat\pi_{\mathcal{A}l}\,{}^{0^+}\mathcal{R}^\parallel}{6} - \frac12{}^{1^+}\hat\pi_{\mathcal{A}la}\,{}^{1^-}\mathcal{R}^{\parallel a} - \frac12{}^{2^+}\hat\pi_{\mathcal{A}la}\,{}^{1^-}\mathcal{R}^{\parallel a} + \frac{{}^{0^+}\hat\pi_{\mathcal{A}}\,{}^{1^-}\mathcal{R}^\parallel{}_l}{3} - \frac43{}^{2^-}\hat\pi_{\mathcal{A}l}{}^{aa'}\,{}^{1^+}\mathcal{R}^\parallel{}_{aa'} + $$

$$ \frac16\epsilon^\parallel{}_{laa'}\,{}^{0^-}\hat\pi_{\mathcal{A}}\,{}^{1^+}\mathcal{R}^{\parallel aa'} - \frac12{}^{1^-}\hat\pi_{\mathcal{A}}{}^a\,{}^{1^+}\mathcal{R}^\parallel{}_{la} - \frac43{}^{1^+}\hat\pi_{\mathcal{A}}{}^{aa'}\,{}^{2^-}\mathcal{R}^\parallel{}_{laa'} + \frac43{}^{2^+}\hat\pi_{\mathcal{A}}{}^{aa'}\,{}^{2^-}\mathcal{R}^\parallel{}_{laa'} + $$

$$ \frac43{}^{2^-}\hat\pi_{\mathcal{A}l}{}^{aa'}\,{}^{2^+}\mathcal{R}^\parallel{}_{aa'} - \frac12{}^{1^-}\hat\pi_{\mathcal{A}}{}^a\,{}^{2^+}\mathcal{R}^\parallel{}_{la} + \frac16\epsilon^\parallel{}_{laa'}\,{}^{1^+}\hat\pi_b{}^{aa'}\,{}^{0^-}\mathcal{T}^\parallel - \frac32{}^{1^+}\hat\pi_{b\,la}\,{}^{1^-}\mathcal{T}^{\parallel a} - $$

$$ \frac32{}^{2^+}\hat\pi_{b\,la}\,{}^{1^-}\mathcal{T}^{\parallel a} + \frac12{}^{1^-}\hat\pi_b{}^a\,{}^{1^+}\mathcal{T}^\parallel{}_{la} - \frac43{}^{1^+}\hat\pi_b{}^{aa'}\,{}^{2^-}\mathcal{T}^\parallel{}_{laa'} + \frac43{}^{2^+}\hat\pi_b{}^{aa'}\,{}^{2^-}\mathcal{T}^\parallel{}_{laa'} \approx 0 $$

** ViewTheory: The 1+ part of the angular super-momentum is:

$$\begin{aligned}
{}^{1^+}\mathcal{H}_{\mathcal{A}nm} \equiv{}& -2\,{}^{1^+}\hat{\pi}_{bmn} - \frac{\epsilon^{\parallel}{}_{mna}\,{}^{0^-}\hat{\pi}_{\mathcal{A}}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,\mathcal{T}\right]}{6\,\mathcal{T}} + \frac{4\,{}^{2^-}\hat{\pi}_{\mathcal{A}mna}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,\mathcal{T}\right]}{3\,\mathcal{T}} + \frac{1}{6}\,\epsilon^{\parallel}{}_{mna}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,{}^{0^-}\hat{\pi}_{\mathcal{A}}\right] - \\
& \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{m}\right] - \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{m}\right] + \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{n}\right] + \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel a}\,n_{n}\right] - \\
& \frac{4}{3}\,\underset{\eta^\parallel}{\mathrm{P}}\left[\eta^{\parallel aa'}\left({}^{3}\mathcal{D}^{\parallel}{}_{a'}\,{}^{2^-}\hat{\pi}_{\mathcal{A}mna}\right)\right] + \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}n}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,\mathcal{T}\right]}{2\,\mathcal{T}} - \frac{1}{2}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,{}^{1^-}\hat{\pi}_{\mathcal{A}n}\right] - \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,n^{a}\right] - \\
& \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}na}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{m}\,n^{a}\right] - \frac{{}^{1^-}\hat{\pi}_{\mathcal{A}m}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,\mathcal{T}\right]}{2\,\mathcal{T}} + \frac{1}{2}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,{}^{1^-}\hat{\pi}_{\mathcal{A}m}\right] + \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,n^{a}\right] + \\
& \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}ma}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{n}\,n^{a}\right] + \frac{1}{6}\,\epsilon^{\parallel}{}_{mna}\,{}^{0^-}\hat{\pi}_{\mathcal{A}}\,{}^{1^-}\mathcal{T}^{\parallel a} - \frac{4}{3}\,{}^{2^-}\hat{\pi}_{\mathcal{A}mna}\,{}^{1^-}\mathcal{T}^{\parallel a} - \frac{1}{2}\,{}^{1^-}\hat{\pi}_{\mathcal{A}n}\,{}^{1^-}\mathcal{T}^{\parallel}{}_{m} + \frac{1}{2}\,{}^{1^-}\hat{\pi}_{\mathcal{A}m}\,{}^{1^-}\mathcal{T}^{\parallel}{}_{n} - \\
& \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}n}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{ma} - \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}n}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{ma} - \frac{1}{3}\,{}^{0^+}\hat{\pi}_{\mathcal{A}}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{mn} + \frac{1}{2}\,{}^{1^+}\hat{\pi}_{\mathcal{A}m}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{na} + \frac{1}{2}\,{}^{2^+}\hat{\pi}_{\mathcal{A}m}{}^{a}\,{}^{1^+}\mathcal{T}^{\parallel}{}_{na} \approx 0
\end{aligned}$$

** ViewTheory: The on-shell brackets between the various if-constraints are:

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{b}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}\phi_{b\,l}\cdot{}^{(2)}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\frac{2\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\underset{1}{\bar{\beta}}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}_{a}\right]{}^{(1)}\mathcal{S}\left({}^{1^-}\lambda^{\parallel}_{\mathcal{T}}{}^{a}-2\,{}^{1^-}\lambda^{\perp}_{\mathcal{T}}{}^{a}\right)}{\mathcal{T}}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\left(-\frac{6\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\underset{1}{\bar{\beta}}\,\underset{\eta^\parallel}{\mathrm{P}}\left[{}^{(2)}\mathcal{S}^{aa'}\right]{}^{(1)}\mathcal{S}\,{}^{2^+}\lambda^{\perp}_{\mathcal{T}\,aa'}}{\mathcal{T}}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\left(-\frac{6\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\underset{0}{\hat{\alpha}}\,{}^{(1)}\mathcal{S}\,{}^{(2)}\mathcal{S}}{\mathcal{T}}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}\varphi^{\parallel}_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{b}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}\varphi^{\parallel}_{b\,l}\cdot{}^{(2)}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\left(12\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\bar{\beta}_{\underset{2}{\cdot}}{}^2\,\overset{(1)}{\cdot}\mathcal{S}\,\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^+}{\cdot}\varphi^{\perp}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\chi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\frac{2\,\overset{(1)}{\cdot}\mathcal{S}\left(-\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{a}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\mathcal{T}\right]+\eta^{\parallel}{}_{aa'}\,\mathcal{T}\left(\overset{3}{\cdot}\mathcal{D}^{\parallel a'}\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{a}\right]\right)\right)}{\mathcal{T}^2}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\chi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{0^+}{\cdot}\phi_{b}\cdot\overset{(1)}{\cdot}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^+}{\cdot}\chi^{\models}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\frac{2\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{aa'}\right]\overset{(1)}{\cdot}\mathcal{S}\left(\mathcal{M}_{\mathrm{Pl}}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}\,\overset{1^+}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,aa'}-\mathcal{M}_{\mathrm{Pl}}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}\,\overset{1^+}{\cdot}\lambda^{\perp}_{\mathcal{T}\,aa'}-4\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\beta}_{\underset{3}{\cdot}}\,\overset{1^+}{\cdot}\mathcal{T}^{\parallel}{}_{aa'}\right)}{\mathcal{T}}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\phi_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\left(-\frac{8\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{a}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{a'}\right]\left(\mathcal{M}_{\mathrm{Pl}}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}\,\overset{1^+}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,aa'}-\mathcal{M}_{\mathrm{Pl}}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}\,\overset{1^+}{\cdot}\lambda^{\perp}_{\mathcal{T}\,aa'}+3\,\mathcal{M}_{\mathrm{Pl}}{}^2\,\hat{\beta}_{\underset{3}{\cdot}}\,\overset{1^+}{\cdot}\mathcal{T}^{\parallel}{}_{aa'}\right)}{3\,\mathcal{T}}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^+}{\cdot}\phi_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\frac{1}{6\,\mathcal{T}}\mathcal{M}_{\mathrm{Pl}}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}\left(-8\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{a}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{a'b}\right]\left(\overset{2^-}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,aa'b}+\overset{2^-}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,aba'}\right)+3\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{a'}\right]\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{aa'}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'a}\right]\right)\right.$$
$$\left.\left(\overset{1^-}{\cdot}\lambda^{\parallel}_{\mathcal{T}}{}^{a}-2\,\overset{1^-}{\cdot}\lambda^{\perp}_{\mathcal{T}}{}^{a}\right)-2\,\eta^{\parallel}{}_{aa'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}_{b}\right]\overset{(2)}{\cdot}\mathcal{S}^{aa'}\left(\overset{1^-}{\cdot}\lambda^{\parallel}_{\mathcal{T}}{}^{b}-2\,\overset{1^-}{\cdot}\lambda^{\perp}_{\mathcal{T}}{}^{b}\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\phi_{\mathcal{A}}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\left(-\frac{\overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}_{a}\right]\overset{(2)}{\cdot}\mathcal{S}}{\mathcal{T}^2}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^-}{\cdot}\phi_{\mathcal{A}}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$
$$\iiint\frac{2\,\epsilon\gamma_{aa'\,i\,Za1}\,\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{i\,Za1}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{a'}\right]\overset{(2)}{\cdot}\mathcal{S}\,n^{a}}{\mathcal{T}^2}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{\overset{1^-}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\left(3\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}^{a'}]\left(\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{aa'}]+\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{a'a}]\right)-2\,\eta^\parallel{}_{a'b}\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}_{a}]\,\overset{(2)}{\cdot}\mathcal{S}^{a'b}\right)}{12\,\mathcal{J}^2}[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{8\,\mathcal{J}^2}\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}^{a}]\left(\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'b}\left(-2\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{a'b}]+2\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}]+4\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'b}{}_{a}]\right)+\right.$$
$$\left.3\,\overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a}{}^{a'}\left(\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{bb'}\,\overset{(2)}{\cdot}\mathcal{S}_{a'}{}^{bb'}]-\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{bb'}\,\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}]\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^+}{\cdot}\varphi^\parallel_{\flat\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^\parallel_{\flat\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\left(\frac{4}{3}\left(\mathcal{M}_{Pl}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}{}^2-\mathcal{M}_{Pl}{}^2\,\bar{\beta}_{\underset{2}{\cdot}}{}^2\right)\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}^{a}]\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{a}]\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\varphi^\parallel_{\flat\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\varphi^\perp_{\flat}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^\perp_{\flat\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\left(\frac{4}{3}\left(2\,\mathcal{M}_{Pl}{}^2\,\bar{\beta}_{\underset{1}{\cdot}}{}^2+\mathcal{M}_{Pl}{}^2\,\bar{\beta}_{\underset{2}{\cdot}}{}^2\right)\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}^{a}]\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{a}]\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^+}{\cdot}\varphi^\perp_{\flat\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\chi^\parallel_{\flat\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}^{a}]\left(-\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'}]\left(\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a}\,n_{a'}]+\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\,n_{a}]-\overset{1^+}{\cdot}\mathcal{T}^\parallel{}_{aa'}\right)+2\,\eta^\parallel{}_{a'b}\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{a}]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b}\,n^{a'}\right)\right)}{2\,\mathcal{J}}[x^0,x^1,x^2,x^3]$$
$$dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^-}{\cdot}\phi_{\flat\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\chi^\parallel_{\flat\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{16\,\mathcal{J}}\underset{\eta^\parallel}{\mathrm{P}}[\overset{(1)}{\cdot}\mathcal{S}^{a}]\left(3\,\delta_{a'}{}^{b}\left(\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{b'm}\,\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{b'm}]-\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{b'm}\,\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{b}{}^{m}]\right)\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a}\,n^{a'}]-6\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}]\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\,n_{b}]+\right.$$
$$3\,\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{bb'}\,\overset{(2)}{\cdot}\mathcal{S}_{a'}{}^{bb'}]\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^{\parallel a'}\,n_{a}]-3\,\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{bb'}\,\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}]\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^{\parallel a'}\,n_{a}]-6\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}]\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\,n_{a'}]-$$
$$3\,\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{bb'}\,\overset{(2)}{\cdot}\mathcal{S}_{a'}{}^{bb'}]\,\overset{1^+}{\cdot}\mathcal{T}^\parallel{}_{a}{}^{a'}+3\,\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{bb'}\,\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}]\,\overset{1^+}{\cdot}\mathcal{T}^\parallel{}_{a}{}^{a'}-2\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}]\,\overset{1^+}{\cdot}\mathcal{T}^\parallel{}_{a'b}-$$
$$4\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}^{a'b}{}_{a}]\,\overset{1^+}{\cdot}\mathcal{T}^\parallel{}_{a'b}+2\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{a'b}]\left(3\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{a'}\,n_{b}]+3\,\underset{\eta^\parallel}{\mathrm{P}}[\overset{3}{\cdot}\mathcal{D}^\parallel{}_{b}\,n_{a'}]+\overset{1^+}{\cdot}\mathcal{T}^\parallel{}_{a'b}\right)-$$
$$\left.6\,\eta^\parallel{}_{a'b}\,\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{b'm}\,\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'm}]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b}\,n^{a'}\right)+6\,\eta^\parallel{}_{a'b}\,\underset{\eta^\parallel}{\mathrm{P}}[\eta^\parallel{}_{b'm}\,\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a}{}^{m}]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b}\,n^{a'}\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{1^-}_{\cdot}\phi_{b\,i}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\cdot}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{18\,\mathcal{T}^2}\Big(-36\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,\delta_{a'}{}^{b}\,\mathcal{T}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{a}]\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{b}{}^{b'}\,n_{b'}]-\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{b'}{}_{b}\,n_{b'}]\Big)\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{a}\,n^{a'}]-$$
$$9\,\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,\mathcal{T}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{a'}]\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{aa'}]-\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a'a}]\Big)\Big({}^{1^-}_{\cdot}\lambda^{\parallel}_{\mathcal{T}}{}^{a}-2\,{}^{1^-}_{\cdot}\lambda^{\perp}_{\mathcal{T}}{}^{a}\Big)+$$
$$4\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{a}]\Big(18\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a}{}^{a'}]\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\mathcal{T}]-18\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{a'}{}_{a}]\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{3}_{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\mathcal{T}]+$$
$$\mathcal{T}\Big(2\,\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{a'b}]\Big({}^{2^-}_{\cdot}\lambda^{\parallel}_{\mathcal{T}\,aa'b}-{}^{2^-}_{\cdot}\lambda^{\parallel}_{\mathcal{T}\,aba'}-2\,{}^{2^-}_{\cdot}\lambda^{\parallel}_{\mathcal{T}\,a'ba}\Big)+9\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a'}{}^{b}\,n_{b}]$$
$$\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{3}_{\cdot}\mathcal{D}^{\parallel a'}\,n_{a}]-{}^{1^+}_{\cdot}\mathcal{T}^{\parallel}{}_{a}{}^{a'}\Big)+9\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a'}\,n_{b}]\Big(-\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{3}_{\cdot}\mathcal{D}^{\parallel a'}\,n_{a}]+{}^{1^+}_{\cdot}\mathcal{T}^{\parallel}{}_{a}{}^{a'}\Big)+$$
$$18\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,\eta^{\parallel}{}_{a'b}\Big(-\Big({}^{3}_{\cdot}\mathcal{D}^{\parallel b}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a}{}^{a'}]\Big)+{}^{3}_{\cdot}\mathcal{D}^{\parallel b}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{a'}{}_{a}]\Big)\Big)\Big)\Big)\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\cdot}\phi_{b\,lm}\cdot{}^{(2)}_{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{3\,\mathcal{T}}\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{aa'}]\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a'}{}^{b}]\Big(\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,{}^{1^+}_{\cdot}\lambda^{\parallel}_{\mathcal{T}\,ab}-\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,{}^{1^+}_{\cdot}\lambda^{\perp}_{\mathcal{T}\,ab}-6\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,{}^{1^+}_{\cdot}\mathcal{T}^{\parallel}{}_{ab}\Big)+$$
$$\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a'}]\Big(\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,{}^{1^+}_{\cdot}\lambda^{\parallel}_{\mathcal{T}\,ab}-\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,{}^{1^+}_{\cdot}\lambda^{\perp}_{\mathcal{T}\,ab}-6\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,{}^{1^+}_{\cdot}\mathcal{T}^{\parallel}{}_{ab}\Big)+\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a}{}^{b}]+\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a}]\Big)$$
$$\Big(\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,{}^{1^+}_{\cdot}\lambda^{\parallel}_{\mathcal{T}\,a'b}-\mathcal{M}_{\mathrm{Pl}}^2\,\bar{\beta}_{\cdot 1}\,{}^{1^+}_{\cdot}\lambda^{\perp}_{\mathcal{T}\,a'b}-6\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\beta}_{\cdot 3}\,{}^{1^+}_{\cdot}\mathcal{T}^{\parallel}{}_{a'b}\Big)\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}_{\cdot}\phi_{\mathcal{A}}\cdot{}^{(2)}_{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}_{\cdot}\phi_{\mathcal{A}}\cdot{}^{(2)}_{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\cdot}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}_{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{12\,\mathcal{T}^2}\Big(3\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{aa'}]\Big(2\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\alpha}_{\cdot 0}\,\mathcal{T}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{aa'}]+2\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\alpha}_{\cdot 0}\,\mathcal{T}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a'a}]+$$
$${}^{1^+}_{\cdot}\hat{\pi}_{\mathcal{A}\,ab}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a'}{}^{b}]+{}^{1^+}_{\cdot}\hat{\pi}_{\mathcal{A}\,a'b}\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a}{}^{b}]+\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a}]\Big)+{}^{1^+}_{\cdot}\hat{\pi}_{\mathcal{A}\,ab}\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a'}]\Big)-$$
$$4\,\mathcal{M}_{\mathrm{Pl}}^2\,\hat{\alpha}_{\cdot 0}\,\eta^{\parallel}{}_{aa'}\,\eta^{\parallel}{}_{bb'}\,\mathcal{T}\,{}^{(1)}_{\cdot}\mathcal{S}^{aa'}\,{}^{(2)}_{\cdot}\mathcal{S}^{bb'}\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\cdot}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}_{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{32\,\mathcal{T}^2}3\,{}^{1^-}_{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{a'}{}_{a}]\,\underset{\eta^{\parallel}}{\mathrm{P}}[\eta^{\parallel}{}_{bb'}\,{}^{(2)}_{\cdot}\mathcal{S}_{a'}{}^{bb'}]+2\,\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{a'b}]\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{aa'b}]+\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{aba'}]-\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{a'ab}]-\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(2)}_{\cdot}\mathcal{S}_{baa'}]\Big)+$$
$$\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}_{a}{}^{a'}]\Big(\underset{\eta^{\parallel}}{\mathrm{P}}[\eta^{\parallel}{}_{bb'}\,{}^{(2)}_{\cdot}\mathcal{S}_{a'}{}^{bb'}]-\underset{\eta^{\parallel}}{\mathrm{P}}[\eta^{\parallel}{}_{bb'}\,{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}]\Big)-\underset{\eta^{\parallel}}{\mathrm{P}}[{}^{(1)}_{\cdot}\mathcal{S}^{a'}{}_{a}]\,\underset{\eta^{\parallel}}{\mathrm{P}}[\eta^{\parallel}{}_{bb'}\,{}^{(2)}_{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}]-$$
$$2\,\eta^{\parallel}{}_{a'b}\,\underset{\eta^{\parallel}}{\mathrm{P}}[\eta^{\parallel}{}_{b'c}\,{}^{(2)}_{\cdot}\mathcal{S}_{a}{}^{b'c}]\,{}^{(1)}_{\cdot}\mathcal{S}^{a'b}+2\,\eta^{\parallel}{}_{a'b}\,\underset{\eta^{\parallel}}{\mathrm{P}}[\eta^{\parallel}{}_{b'c}\,{}^{(2)}_{\cdot}\mathcal{S}^{b'}{}_{a}{}^{c}]\,{}^{(1)}_{\cdot}\mathcal{S}^{a'b}\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\cdot}\varphi^{\parallel}_{b\,lm}\cdot{}^{(2)}_{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\cdot}\phi_{b\,ij}\cdot{}^{(1)}_{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\cdot}\varphi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{+}}{\cdot}\phi_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{+}}{\cdot}\phi_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^{+}}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{+}}{\cdot}\phi_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{+}}{\cdot}\phi_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{+}}{\cdot}\varphi^{\perp}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\left(\frac{2}{3}\mathcal{M}_{Pl}{}^{2}\,\bar{\beta}_{\underset{1}{\cdot}}{}^{2}\left(3\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\right]\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{aa'}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'a}\right]\right)-2\,\eta^{\parallel}{}_{aa'}\,\eta^{\parallel}{}_{bb'}\,\overset{(1)}{\cdot}\mathcal{S}^{aa'}\,\overset{(2)}{\cdot}\mathcal{S}^{bb'}\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{2^{+}}{\cdot}\phi_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\chi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{6\,\mathcal{J}^2}\left(3\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{ab}\right]\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]+\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\mathcal{J}\right]-\mathcal{J}\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}\right]+\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}\right]\right)\right)+\right.$$

$$\left.2\,\eta^{\parallel}{}_{ab}\,\overset{(1)}{\cdot}\mathcal{S}^{ab}\left(-\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{a'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]+\eta^{\parallel}{}_{a'b'}\,\mathcal{J}\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{a'}\right]\right)\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{2^{+}}{\cdot}\phi_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\chi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{96\,\mathcal{J}^2}\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{ab}\right]\left(-18\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{b'c}\,\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{b'c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]+18\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{b'c}\,\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{b}{}^{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]+27\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{bc}{}^{c'}\,n_{c'}\right]\right.\right.$$

$$\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}n^{b'}\right]+9\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{c'}{}_{c}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}n^{b'}\right]-27\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{cb}{}^{c'}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}n^{b'}\right]-$$

$$18\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{c}{}^{c'}{}_{b}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}n^{b'}\right]-9\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c'}{}_{bc}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}n^{b'}\right]+$$

$$18\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c'}{}_{cb}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}n^{b'}\right]-18\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{b'c}\,\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\mathcal{J}\right]+18\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{b'c}\,\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a}{}^{c}\right]$$

$$\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}\mathcal{J}\right]+27\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{ac}{}^{c'}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}n^{b'}\right]+9\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{c'}{}_{c}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}n^{b'}\right]-$$

$$27\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{ca}{}^{c'}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}n^{b'}\right]-18\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{c}{}^{c'}{}_{a}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}n^{b'}\right]-$$

$$9\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c'}{}_{ac}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}n^{b'}\right]+18\,\delta_{b'}{}^{c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c'}{}_{ca}\,n_{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b}n^{b'}\right]+$$

$$36\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'}{}_{b}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\mathcal{J}\right]+36\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{b'}{}_{a}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\mathcal{J}\right]-36\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{ab}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\mathcal{J}\right]-$$

$$36\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{ba}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\mathcal{J}\right]-27\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{bb'}{}^{c}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{a}\right]-9\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{c}{}_{b'}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{a}\right]+$$

$$27\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b'b}{}^{c}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{a}\right]+18\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b'}{}^{c}{}_{b}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{a}\right]+9\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c}{}_{bb'}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{a}\right]-$$

$$18\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c}{}_{b'b}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{a}\right]-27\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{ab'}{}^{c}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{b}\right]-9\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{c}{}_{b'}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{b}\right]+$$

$$27\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b'a}{}^{c}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{b}\right]+18\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b'}{}^{c}{}_{a}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{b}\right]+9\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c}{}_{ab'}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{b}\right]-$$

$$18\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c}{}_{b'a}\,n_{c}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\,n_{b}\right]-4\,\epsilon^{\parallel}{}_{bb'c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'c}\right]\overset{0^{-}}{\cdot}\mathcal{T}^{\parallel}-4\,\epsilon^{\parallel}{}_{ab'c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{b'c}\right]\overset{0^{-}}{\cdot}\mathcal{T}^{\parallel}+$$

$$4\,\epsilon^{\parallel}{}_{bb'c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a}{}^{c}\right]\overset{0^{-}}{\cdot}\mathcal{T}^{\parallel}+4\,\epsilon^{\parallel}{}_{ab'c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{b}{}^{c}\right]\overset{0^{-}}{\cdot}\mathcal{T}^{\parallel}+8\,\epsilon^{\parallel}{}_{bb'c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'c}{}_{a}\right]\overset{0^{-}}{\cdot}\mathcal{T}^{\parallel}+$$

$$8\,\epsilon^{\parallel}{}_{ab'c}\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'c}{}_{b}\right]\overset{0^{-}}{\cdot}\mathcal{T}^{\parallel}+27\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{bb'}{}^{c}\,n_{c}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel}{}_{a}{}^{b'}+9\,\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b}{}^{c}{}_{b'}\,n_{c}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel}{}_{a}{}^{b'}-$$

$$27\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b'b}{}^{c}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{a}{}^{b'}-18\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}{}_{b}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{a}{}^{b'}-9\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{c}{}_{bb'}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{a}{}^{b'}+$$

$$18\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{c}{}_{b'b}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{a}{}^{b'}+27\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{ab'}{}^{c}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{b}{}^{b'}+9\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{a}{}^{c}{}_{b'}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{b}{}^{b'}-$$

$$27\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b'a}{}^{c}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{b}{}^{b'}-18\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}{}_{a}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{b}{}^{b'}-9\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{c}{}_{ab'}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{b}{}^{b'}+$$

$$18\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{c}{}_{b'a}\,n_{c}\right]{}^{1^+}\mathcal{T}^{\parallel}{}_{b}{}^{b'}+18\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel}{}_{a}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b}{}^{b'c}\right]\right)-18\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel}{}_{a}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b'}{}_{b}{}^{c}\right]\right)+$$

$$18\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel}{}_{b}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{a}{}^{b'c}\right]\right)-18\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel}{}_{b}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b'}{}_{a}{}^{c}\right]\right)-36\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel c}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{a}{}^{b'}{}_{b}\right]\right)-$$

$$36\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel c}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b}{}^{b'}{}_{a}\right]\right)+36\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel c}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b'}{}_{ab}\right]\right)+36\,\eta^{\parallel}{}_{b'c}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel c}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b'}{}_{ba}\right]\right)\Bigg)+$$

$$18\,\eta^{\parallel}{}_{ab}\;{}^{(1)}\mathcal{S}^{ab}\Bigg(2\,\mathrm{P}_{\eta^{\parallel}}\!\left[\eta^{\parallel}{}_{cc'}\;{}^{(2)}\mathcal{S}_{b'}{}^{cc'}\right]\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel b'}\mathcal{J}\right]-2\,\mathrm{P}_{\eta^{\parallel}}\!\left[\eta^{\parallel}{}_{cc'}\;{}^{(2)}\mathcal{S}^{c}{}_{b'}{}^{c'}\right]\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel b'}\mathcal{J}\right]+$$

$$\mathcal{J}\Bigg(\delta_{b'}{}^{c'}\left(-\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{a'}{}_{cc'}\,n_{a'}\right]-\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{a'}{}_{c'c}\,n_{a'}\right]+\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{c}{}^{a'}{}_{c'}\,n_{a'}\right]+\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{c'}{}^{a'}{}_{c}\,n_{a'}\right]\right)\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel c}\,n^{b'}\right]-$$

$$2\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{cb'}{}^{c'}\,n_{c'}\right]\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel c}\,n^{b'}\right]-2\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{c}{}^{c'}{}_{b'}\,n_{c'}\right]\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel c}\,n^{b'}\right]+2\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{c'}{}_{cb'}\,n_{c'}\right]\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel c}\,n^{b'}\right]-$$

$$2\left(\eta^{\parallel}{}_{a'b}\;{}^{(2)}\mathcal{S}^{aa'b}\,n_{a}\right)\left(\eta^{\parallel}{}_{aa'}\left({}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right)\right)+2\left(\eta^{\parallel}{}_{ab}\;{}^{(2)}\mathcal{S}^{aa'b}\,n_{a'}\right)\left(\eta^{\parallel}{}_{aa'}\left({}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right)\right)+$$

$$2\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b'c}{}^{c'}\,n_{c'}\right]\left(\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel c}\,n^{b'}\right]-{}^{1^+}\mathcal{T}^{\parallel b'c}\right)-\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{b'}{}^{c'}{}_{c}\,n_{c'}\right]{}^{1^+}\mathcal{T}^{\parallel b'c}+\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{c'}{}_{b'c}\,n_{c'}\right]{}^{1^+}\mathcal{T}^{\parallel b'c}+2$$

$$\eta^{\parallel}{}_{b'c'}\;\eta^{\parallel}{}_{ca'}\left({}^{3}\mathcal{D}^{\parallel a'}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b'cc'}\right]\right)-2\,\eta^{\parallel}{}_{b'a'}\;\eta^{\parallel}{}_{cc'}\left({}^{3}\mathcal{D}^{\parallel a'}\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b'cc'}\right]\right)+2\,\eta^{\parallel}{}_{a'd}\;\eta^{\parallel}{}_{cc'}\;{}^{(2)}\mathcal{S}^{b'cc'}$$

$$n_{b'}\left({}^{3}\mathcal{D}^{\parallel d}\,n^{a'}\right)-2\,\eta^{\parallel}{}_{a'd}\;\eta^{\parallel}{}_{b'c'}\;{}^{(2)}\mathcal{S}^{b'cc'}\,n_{c}\left({}^{3}\mathcal{D}^{\parallel d}\,n^{a'}\right)\Bigg)\Bigg)\Bigg)\Bigg)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}\phi_{b\,ij}\cdot{}^{(1)}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}\chi^{\models}_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\Bigg(-\frac{1}{3\mathcal{J}}\Bigg(3\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(1)}\mathcal{S}^{aa'}\right]\Bigg(\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{a'}{}^{b}\right]\left(\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n_{b}\right]+\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel}{}_{b}\,n_{a}\right]+\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\;{}^{2^+}\lambda^{\perp}_{\mathcal{T}\,ab}-\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\;{}^{1^+}\mathcal{T}^{\parallel}{}_{ab}\right)-$$

$$\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b}{}_{a'}\right]\left(\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n_{b}\right]+\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel}{}_{b}\,n_{a}\right]+\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\;{}^{2^+}\lambda^{\perp}_{\mathcal{T}\,ab}-\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\;{}^{1^+}\mathcal{T}^{\parallel}{}_{ab}\right)+$$

$$\left(\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}_{a}{}^{b}\right]-\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{b}{}_{a}\right]\right)\Big(\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\,n_{b}\right]+\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{3}\mathcal{D}^{\parallel}{}_{b}\,n_{a'}\right]+\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\bar{\beta}_{1}\;{}^{2^+}\lambda^{\perp}_{\mathcal{T}\,a'b}-\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}$$

$${}^{1^+}\mathcal{T}^{\parallel}{}_{a'b}\Big)\Bigg)+4\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\hat{\beta}_{3}\,\eta^{\parallel}{}_{aa'}\,\mathrm{P}_{\eta^{\parallel}}\!\left[{}^{(2)}\mathcal{S}^{bb'}\right]{}^{(1)}\mathcal{S}^{aa'}\;{}^{1^+}\mathcal{T}^{\parallel}{}_{bb'}\Bigg)\Bigg)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}\phi_{\mathcal{A}}\cdot{}^{(2)}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}\varphi^{\parallel}_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}\phi_{\mathcal{A}}\cdot{}^{(1)}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}\varphi^{\parallel}_{b\,l}\cdot{}^{(2)}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\varphi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(2)}_{\bullet}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx$$

$$\iiint\frac{{}^{1^+}_{\bullet}\hat{\pi}_{\mathcal{A}\,aa'}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}_{\bullet}\mathcal{S}^{aa'}\right]\ {}^{(1)}_{\bullet}\mathcal{S}}{\mathcal{J}^2}[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(2)}_{\bullet}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\varphi^{\parallel}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\varphi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\varphi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(2)}_{\bullet}\mathcal{S}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{0^-}_{\bullet}\phi_{\mathcal{A}}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx$$

$$\iiint\frac{\epsilon\gamma_{aa'lm}\ {}^{1^-}_{\bullet}\hat{\pi}_{\mathcal{A}}{}^{a}\ \underset{\eta^{\parallel}}{\mathrm{P}}\left[{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right]\ {}^{(1)}_{\bullet}\mathcal{S}\ n^{a'}}{\mathcal{J}^2}[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^+}_{\bullet}\phi_{\mathcal{A}\,ij}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ij}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\phi_{\mathcal{A}\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\bullet}\phi_{\mathcal{A}\,ij}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ij}\right)[x^0, x^1, x^2, x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\phi_{\mathcal{A}\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0, y^1, y^2, y^3]\,dy^3\,dy^2\,dy^1\right\} \approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^+}{\cdot}\varphi^{\parallel}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^+}{\cdot}\varphi^{\perp}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\chi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\chi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^+}{\cdot}\phi_{\mathcal{A}ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^+}{\cdot}\chi^{\vDash}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{12\mathcal{J}^2}\Bigg(3\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}a'b}\ \underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\right]\left(\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a}\right]\right)+3\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}ab}\ \underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\right]\left(\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'}{}^{b}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a'}\right]\right)-$$

$$4\ \eta^{\parallel}{}_{aa'}\ \overset{1^+}{\cdot}\hat{\pi}_{\mathcal{A}bb'}\ \underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}^{bb'}\right]\ \overset{(1)}{\cdot}\mathcal{S}^{aa'}\Bigg)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^+}{\cdot}\varphi^{\parallel}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^+}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^+}{\cdot}\varphi^{\perp}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^-}{\cdot}\chi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^-}{\cdot}\phi_{\mathcal{A}ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^-}{\cdot}\chi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{32\mathcal{J}}\Bigg(-6\ \underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b}\right]\left(2\ \underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{aa'b}\right]+\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{aba'}\right]-2\ \underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'ab}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'ba}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{baa'}\right]+\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{ba'a}\right]\right)+$$

$$9\ \underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{a'b}\ \overset{(1)}{\cdot}\mathcal{S}^{aa'b}\right]\left(\underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{b'c}\ \overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'c}\right]-\underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{b'c}\ \overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a}{}^{c}\right]\right)+$$

$$9\ \underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{ab}\ \overset{(1)}{\cdot}\mathcal{S}^{aa'b}\right]\left(-\underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{b'c}\ \overset{(2)}{\cdot}\mathcal{S}_{a'}{}^{b'c}\right]+\underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{b'c}\ \overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a'}{}^{c}\right]\right)\Bigg)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{2^{-}}{\cdot}\phi_{\mathcal{A}\,ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{+}}{\cdot}\chi^{\vDash}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{32\,\mathcal{J}^2}\,\overset{1^{-}}{\cdot}\hat{\pi}_{\mathcal{A}}{}^{a}\left(-3\underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{bb'}\ \overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{bb'}\right]\left(\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{a'}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}^{a'}{}_{a}\right]\right)+3\underset{\eta^{\parallel}}{P}\left[\eta^{\parallel}{}_{bb'}\ \overset{(1)}{\cdot}\mathcal{S}^{b}{}_{a'}{}^{b'}\right]\left(\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{a'}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}^{a'}{}_{a}\right]\right)+\right.$$

$$\left.2\left(\underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{a'b}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}^{a'}{}_{a}{}^{b}\right]-2\underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}^{a'b}{}_{a}\right]\right)\left(\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'b}\right]-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{ba'}\right]\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^{+}}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{+}}{\cdot}\varphi^{\perp}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\chi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\chi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\varphi^{\parallel}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{+}}{\cdot}\chi^{\vDash}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\left(\frac{2}{3}\,\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\underset{1}{\bar{\beta}_{\cdot}}{}^{2}\,\underset{\eta^{\parallel}}{P}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\right]\left(-\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{aa'}\right]+\underset{\eta^{\parallel}}{P}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'a}\right]\right)\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^{+}}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{+}}{\cdot}\varphi^{\perp}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\chi^{\parallel}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\chi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{1^{-}}{\cdot}\varphi^{\parallel}_{b\,i}\cdot\overset{(1)}{\cdot}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{+}}{\cdot}\chi^{\vDash}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,lmn}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{0^{+}}{\cdot}\varphi^{\perp}_{b}\cdot\overset{(2)}{\cdot}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left(\overset{2^{-}}{\cdot}\varphi^{\parallel}_{b\,ijk}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left(\overset{1^{-}}{\cdot}\varphi^{\perp}_{b\,l}\cdot\overset{(2)}{\cdot}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^-}_{\bullet}\varphi^{\parallel}_{b\,ijk}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^-}_{\bullet}\varphi^{\parallel}_{b\,ijk}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^-}_{\bullet}\varphi^{\parallel}_{b\,ijk}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^-}_{\bullet}\varphi^{\parallel}_{b\,ijk}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ijk}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(2)}_{\bullet}\mathcal{S}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{0^+}_{\bullet}\varphi^{\perp}_{b}\cdot{}^{(1)}_{\bullet}\mathcal{S}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\varphi^{\perp}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,ij}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,ij}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,ij}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^+}_{\bullet}\varphi^{\perp}_{b\,ij}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{ij}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}_{\bullet}\chi^{\vDash}_{b\,lm}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,l}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{l}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}_{\bullet}\chi^{\parallel}_{b\,i}\cdot{}^{(1)}_{\bullet}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}_{\bullet}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}_{\bullet}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{1^-}\chi^{\parallel}_{b\,i}\cdot{}^{(1)}\mathcal{S}^{i}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}\chi^{\models}_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{4\mathcal{J}^2}\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{a}\right]$$

$$\Big(\delta_{a'}{}^{b}\,\mathcal{J}\left(\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b}{}^{b'}\,n_{b'}\right]-\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{b'}{}_{b}\,n_{b'}\right]\right)\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n^{a'}\right]-2\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a}{}^{a'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]+2\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{a'}{}_{a}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]-$$

$$\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{b}\,n_{b}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n_{a}\right]+\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{b}{}_{a'}\,n_{b}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n_{a}\right]+\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{b}\,n_{b}\right]\,{}^{1^+}\mathcal{T}^{\parallel}{}_{a}{}^{a'}-\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{b}{}_{a'}\,n_{b}\right]$$

$${}^{1^+}\mathcal{T}^{\parallel}{}_{a}{}^{a'}+2\,\eta^{\parallel}{}_{a'b}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel b}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a}{}^{a'}\right]\right)-2\,\eta^{\parallel}{}_{a'b}\,\mathcal{J}\left({}^{3}\mathcal{D}^{\parallel b}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{a'}{}_{a}\right]\right)\Big)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1$$

$$\left\{\iiint\left({}^{2^-}\chi^{\parallel}_{b\,ij\hbar}\cdot{}^{(1)}\mathcal{S}^{ij\hbar}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{2^-}\chi^{\parallel}_{b\,lmn}\cdot{}^{(2)}\mathcal{S}^{lmn}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx 0$$

$$\left\{\iiint\left({}^{2^-}\chi^{\parallel}_{b\,ij\hbar}\cdot{}^{(1)}\mathcal{S}^{ij\hbar}\right)[x^0,x^1,x^2,x^3]\,dx^3\,dx^2\,dx^1,\ \iiint\left({}^{1^+}\chi^{\models}_{b\,lm}\cdot{}^{(2)}\mathcal{S}^{lm}\right)[x^0,y^1,y^2,y^3]\,dy^3\,dy^2\,dy^1\right\}\approx$$

$$\iiint\frac{1}{32\mathcal{J}^2}\Big(-6\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{b'c}\,{}^{(1)}\mathcal{S}_{a'}{}^{b'c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{aa'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]+6\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{b'c}\,{}^{(1)}\mathcal{S}^{b'}{}_{a'}{}^{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{aa'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]+4\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]$$

$$\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]-4\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'a'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\mathcal{J}\right]+4\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n_{a'}\right]-$$

$$4\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{b'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n_{a'}\right]+2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n_{b'}\right]-$$

$$2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{a'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a}\,n_{b'}\right]-4\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{ab'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]+$$

$$6\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{b'c}\,{}^{(1)}\mathcal{S}_{a}{}^{b'c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{aa'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]-6\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{b'c}\,{}^{(1)}\mathcal{S}^{b'}{}_{a}{}^{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{aa'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]+$$

$$4\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'a}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\mathcal{J}\right]-4\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\,n_{a}\right]+$$

$$4\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{b'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\,n_{a}\right]-2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\,n_{b'}\right]+$$

$$2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{a}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{a'}\,n_{b'}\right]+3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}_{b'}{}^{c'i}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]-$$

$$3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}^{c'}{}_{b'}{}^{i}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]-3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}_{a'}{}^{c'i}\right]$$

$$\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]+3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}^{c'}{}_{a'}{}^{i}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]-$$

$$3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}_{b'}{}^{c'i}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{a'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]+3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}^{c'}{}_{b'}{}^{i}\right]$$

$$\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{a'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]+3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}_{a'}{}^{c'i}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{b'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]-$$

$$3\,\delta_{a}{}^{b'}\,\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[\eta^{\parallel}{}_{c'i}\,{}^{(1)}\mathcal{S}^{c'}{}_{a'}{}^{i}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{b'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel a'}\,n^{a}\right]-8\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{aa'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{b'}\mathcal{J}\right]+$$

$$8\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'a}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{b'}\mathcal{J}\right]-2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{b'}\,n_{a}\right]+$$

$$2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{a'}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{b'}\,n_{a}\right]+2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a}{}^{c}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{b'}\,n_{a'}\right]-$$

$$2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{a}\,n_{c}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{3}\mathcal{D}^{\parallel}{}_{b'}\,n_{a'}\right]+4\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{b'}{}^{c}\,n_{c}\right]\,{}^{1^+}\mathcal{T}^{\parallel}{}_{aa'}-$$

$$4\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}^{c}{}_{b'}\,n_{c}\right]\,{}^{1^+}\mathcal{T}^{\parallel}{}_{aa'}+2\mathcal{J}\,\mathrm{P}_{\eta^{\parallel}}\left[{}^{(1)}\mathcal{S}^{aa'b'}\right]\mathrm{P}_{\eta^{\parallel}}\left[{}^{(2)}\mathcal{S}_{a'}{}^{c}\,n_{c}\right]\,{}^{1^+}\mathcal{T}^{\parallel}{}_{ab'}-$$

$$2\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c}{}_{a'}\;n_{c}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel}{}_{ab'}+3\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{cc'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'}\;n_{b'}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel aa'}-$$

$$3\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}^{c}{}_{a'}{}^{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b'}\;n_{b'}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel aa'}-3\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{cc'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a}\;n_{b'}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel aa'}+$$

$$3\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}^{c}{}_{a'}{}^{c'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b'}{}_{a}\;n_{b'}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel aa'}-2\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{c}\;n_{c}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel}{}_{a'b'}+$$

$$2\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{c}{}_{a}\;n_{c}\right]\overset{1^{+}}{\cdot}\mathcal{T}^{\parallel}{}_{a'b'}-4\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'b'}\right]\right)+$$

$$4\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b'a'}\right]\right)+4\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{ab'}\right]\right)-$$

$$4\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{a'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{b'a}\right]\right)+8\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{aa'}\right]\right)-$$

$$8\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'b'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel}{}_{b'}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'a}\right]\right)-6\;\eta^{\parallel}{}_{a'b'}\;\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}_{a}{}^{cc'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\;\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{aa'}\right]\right)+$$

$$6\;\eta^{\parallel}{}_{ab'}\;\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}_{a'}{}^{cc'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\;\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{aa'}\right]\right)+6\;\eta^{\parallel}{}_{a'b'}\;\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}^{c}{}_{a}{}^{c'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\;\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{aa'}\right]\right)-$$

$$6\;\eta^{\parallel}{}_{ab'}\;\mathcal{J}\,\underset{\eta^{\parallel}}{\mathrm{P}}\left[\eta^{\parallel}{}_{cc'}\;\overset{(1)}{\cdot}\mathcal{S}^{c}{}_{a'}{}^{c'}\right]\left(\overset{3}{\cdot}\mathcal{D}^{\parallel b'}\;\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{aa'}\right]\right)\Bigg)\Bigg)[x^{0},\,x^{1},\,x^{2},\,x^{3}]\,dx^{3}\,dx^{2}\,dx^{1}$$

$$\left\{\iiint\left(\overset{1^{+}}{\cdot}\chi^{\vDash}_{b\,ij}\cdot\overset{(1)}{\cdot}\mathcal{S}^{ij}\right)[x^{0},\,x^{1},\,x^{2},\,x^{3}]\,dx^{3}\,dx^{2}\,dx^{1},\;\iiint\left(\overset{1^{+}}{\cdot}\chi^{\vDash}_{b\,lm}\cdot\overset{(2)}{\cdot}\mathcal{S}^{lm}\right)[x^{0},\,y^{1},\,y^{2},\,y^{3}]\,dy^{3}\,dy^{2}\,dy^{1}\right\}\approx$$

$$\iiint\frac{1}{3\mathcal{J}}\mathcal{M}_{\mathrm{Pl}}{}^{2}\,\underset{1}{\bar{\beta}\,\cdot}\;\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(1)}{\cdot}\mathcal{S}^{aa'}\right]\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a'}{}^{b}\right]\left(\overset{1^{+}}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,ab}-\overset{1^{+}}{\cdot}\lambda^{\perp}_{\mathcal{T}\,ab}\right)+\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a'}\right]\left(-\overset{1^{+}}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,ab}+\overset{1^{+}}{\cdot}\lambda^{\perp}_{\mathcal{T}\,ab}\right)-\right.$$

$$\left.\left(\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}_{a}{}^{b}\right]-\underset{\eta^{\parallel}}{\mathrm{P}}\left[\overset{(2)}{\cdot}\mathcal{S}^{b}{}_{a}\right]\right)\left(\overset{1^{+}}{\cdot}\lambda^{\parallel}_{\mathcal{T}\,a'b}-\overset{1^{+}}{\cdot}\lambda^{\perp}_{\mathcal{T}\,a'b}\right)\right)[x^{0},\,x^{1},\,x^{2},\,x^{3}]\,dx^{3}\,dx^{2}\,dx^{1}$$

This concludes the HiGGS output.

Concrete relation to manuscript: The above constraints and Poisson brackets constitute the data represented by coloured squares in Fig. 5 in our Manuscript. The primary constraints ϕ are listed along the top row. The primary Poisson brackets $\{\phi,\ \phi\}$ are used to infer the white, red or yellow squares in the matrix depending on whether they are vanishing, or appear only in proportion to phase space variables, or are order unity (e.g. proportional to the metric or unit-timelike vector). The $\{\phi,\ \overset{0^{+}}{\cdot}\mathcal{H}_{b}\}$ Poisson brackets define the secondary constraints "χ", which appear on the sides of the matrix. Most of the Poisson brackets $\{\chi,\ \phi\}$ need not be computed (grey squares), but it can be noticed without detailed calculation that many of the remaining required brackets (yellow squares) do indeed arise. Unlike in the strongly coupled case, we find that tertiary and quaternary constraints arise in the theory: but these are also not computed in detail above. Instead, their existence can readily be inferred by considering whether the consistency chain in question can be absorbed by determining a multiplier, or whether it must continue. In case of continuation, the relevant terms in the induced constraints which arise can be understood by considering Eq. (4) in arXiv:2205.13534.