In[1]:=
```
Get@FileNameJoin@{NotebookDirectory[], "ParityMixing.m"};
```

First we import some formatting...

...okay, that's better, from now on any commentary written inside this Calibration.m wrapper will present as blue text (i.e. this text is not part of PSALTer, it is just a use-case). Next we load the PSALTer package:

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`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}

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** 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}

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

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

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

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

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** Variable $CovDFormat changed from Postfix to Prefix

** Option CurvatureRelations of DefCovD changed from False to True

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

Package xAct`PSALTer` version 1.0.0-developer, {2023, 3, 6}

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  Rigouzzo and Cillian Rew, under the General Public License.

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

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  Disclaimer[]. This is free software, and you are welcome to redistribute
  it under certain conditions. See the General Public License for details.

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

PSALTer should now be loaded, let's try a theory.

{HoldPattern[∂[p][f[yz]] ∂[q][f[ab]]] :> Module[{}, f^yz f†^ab k^p k^q],

 HoldPattern[∂[p][𝒜[xyz]] ∂[q][f[ab]]] :> Module[{}, 𝒜^xyz f†^ab k^p k^q],

 HoldPattern[∂[p][f[yz]] ∂[q][𝒜[abc]]] :> Module[{}, 𝒜†^abc f^yz k^p k^q],

 HoldPattern[∂[p][𝒜[xyz]] ∂[q][𝒜[abc]]] :> Module[{}, 𝒜^xyz 𝒜†^abc k^p k^q],

 HoldPattern[f[ab] ∂[p][f[yz]]] :> Module[{}, -I f^yz f†^ab k^p],

 HoldPattern[f[ab] ∂[p][𝒜[xyz]]] :> Module[{}, -I 𝒜^xyz f†^ab k^p],

 HoldPattern[𝒜[abc] ∂[p][f[yz]]] :> Module[{}, -I 𝒜†^abc f^yz k^p],

 HoldPattern[𝒜[abc] ∂[p][𝒜[xyz]]] :> Module[{}, -I 𝒜^xyz 𝒜†^abc k^p],

 HoldPattern[f[ab] f[yz]] :> Module[{}, f^yz f†^ab], HoldPattern[𝒜[xyz] f[ab]] :> Module[{}, 𝒜^xyz f†^ab],

 HoldPattern[𝒜[abc] f[yz]] :> Module[{}, 𝒜†^abc f^yz],

 HoldPattern[𝒜[abc] 𝒜[xyz]] :> Module[{}, 𝒜^xyz 𝒜†^abc]}
```

$$t_1\, \mathcal{A}^{qij}\, \mathcal{A}\dagger_{qji} + t_1\, \mathcal{A}^{qi}{}_{q}\, \mathcal{A}\dagger_{i}{}^{j} - 2i t_1\, \mathcal{A}_{q}{}^{j}{}_{j}\, f\dagger^{qi}\, k_i + 2i t_1\, \mathcal{A}_{qji}\, f\dagger^{qi}\, k^j$$

$$\frac{t_1\, {}^{0^-}\!\mathcal{A}^{\parallel}\, {}^{0^-}\!\mathcal{A}^{\parallel}\dagger}{6} - \frac{2\, t_1\, {}^{0^+}\!\mathcal{A}^{\parallel}\, {}^{0^+}\!\mathcal{A}^{\parallel}\dagger}{3} - \frac{1}{2} t_1\, {}^{1^-}\!\mathcal{A}^{\parallel q}\, {}^{1^-}\!\mathcal{A}^{\parallel}\dagger_{q} - t_1\, {}^{1^+}\!\mathcal{A}^{\parallel qb}\, {}^{1^+}\!\mathcal{A}^{\parallel}\dagger_{qb} + \frac{8}{9} t_1\, {}^{2^-}\!\mathcal{A}^{\parallel qbi}\, {}^{2^-}\!\mathcal{A}^{\parallel}\dagger_{qbi} +$$

$$t_1\, {}^{2^+}\!\mathcal{A}^{\parallel qb}\, {}^{2^+}\!\mathcal{A}^{\parallel}\dagger_{qb} + t_1\, {}^{1^-}\!\mathcal{A}^{\parallel}\dagger^{q}\, {}^{1^-}\!\mathcal{A}^{\perp}{}_{q} + t_1\, {}^{1^-}\!\mathcal{A}^{\parallel q}\, {}^{1^-}\!\mathcal{A}^{\perp}\dagger_{q} - t_1\, {}^{1^+}\!\mathcal{A}^{\parallel}\dagger^{qb}\, {}^{1^+}\!\mathcal{A}^{\perp}{}_{qb} - t_1\, {}^{1^+}\!\mathcal{A}^{\parallel qb}\, {}^{1^+}\!\mathcal{A}^{\perp}\dagger_{qb} -$$

$$\frac{2}{3} i k t_1\, {}^{0^+}\!\mathcal{A}^{\parallel}\, {}^{0^+}\!f^{\parallel}\dagger - 2 i k t_1\, {}^{1^+}\!\mathcal{A}^{\parallel qb}\, {}^{1^+}\!f^{\parallel}\dagger_{qb} - 2 i k t_1\, {}^{2^+}\!\mathcal{A}^{\parallel qb}\, {}^{2^+}\!f^{\parallel}\dagger_{qb} - 2 i k t_1\, {}^{0^+}\!\mathcal{A}^{\parallel}\, {}^{0^+}\!f^{\perp}\dagger + 2 i k t_1\, {}^{1^-}\!\mathcal{A}^{\parallel q}\, {}^{1^-}\!f^{\perp}\dagger_{q}$$

$$\langle|\, 0 \to \{\text{APara0pConstantSymbol}, \text{FPara0pConstantSymbol}, \text{FPerp0pConstantSymbol}, \text{APara0mConstantSymbol}, \text{APara0pConstantSymbol}\dagger, \text{FPara0pConstantSymbol}\dagger, \text{FPerp0pConstantSymbol}\dagger, \text{APara0mConstantSymbol}\dagger\},$$
$$1 \to \{\text{APara1pConstantSymbol}, \text{APerp1pConstantSymbol}, \text{FPara1pConstantSymbol}, \text{APara1mConstantSymbol}, \text{APerp1mConstantSymbol}, \text{FPara1mConstantSymbol}, \text{FPerp1mConstantSymbol}, \text{APara1pConstantSymbol}\dagger, \text{APerp1pConstantSymbol}\dagger, \text{FPara1pConstantSymbol}\dagger, \text{APara1mConstantSymbol}\dagger, \text{APerp1mConstantSymbol}\dagger, \text{FPara1mConstantSymbol}\dagger, \text{FPerp1mConstantSymbol}\dagger\},$$
$$2 \to \{\text{APara2pConstantSymbol}, \text{FPara2pConstantSymbol}, \text{APara2mConstantSymbol}, \text{APara2pConstantSymbol}\dagger, \text{FPara2pConstantSymbol}\dagger, \text{APara2mConstantSymbol}\dagger\}\,|\rangle$$

$$\langle\Big|\, 0 \to \Big\{\frac{1}{\text{APara0pRescalingSymbol}}, \frac{1}{\text{FPara0pRescalingSymbol}}, \frac{1}{\text{FPerp0pRescalingSymbol}}, \frac{1}{\text{APara0mRescalingSymbol}}\Big\},$$
$$1 \to \Big\{\frac{1}{\text{APara1pRescalingSymbol}}, \frac{1}{\text{APerp1pRescalingSymbol}}, \frac{1}{\text{FPara1pRescalingSymbol}}, \frac{1}{\text{APara1mRescalingSymbol}}, \frac{1}{\text{APerp1mRescalingSymbol}}, \frac{1}{\text{FPara1mRescalingSymbol}}, \frac{1}{\text{FPerp1mRescalingSymbol}}\Big\},$$
$$2 \to \Big\{\frac{1}{\text{APara2pRescalingSymbol}}, \frac{1}{\text{FPara2pRescalingSymbol}}, \frac{1}{\text{APara2mRescalingSymbol}}\Big\}\Big|\rangle$$

$$\langle\Big|\, 0 \to \Big\{{}^{0^+}\!\sigma^{\parallel}, {}^{0^+}\!\tau^{\parallel}, {}^{0^+}\!\tau^{\perp}, {}^{0^-}\!\sigma^{\parallel}\Big\},$$
$$1 \to \Big\{{}^{1^+}\!\sigma^{\parallel qb}, {}^{1^+}\!\sigma^{\perp qb}, {}^{1^+}\!\tau^{\parallel qb}, {}^{1^-}\!\sigma^{\parallel q}, {}^{1^-}\!\sigma^{\perp q}, {}^{1^-}\!\tau^{\parallel q}, {}^{1^-}\!\tau^{\perp q}\Big\}, 2 \to \Big\{{}^{2^+}\!\sigma^{\parallel qb}, {}^{2^+}\!\tau^{\parallel qb}, {}^{2^-}\!\sigma^{\parallel qbc}\Big\}\Big|\rangle$$

$$\langle\Big|\, 0 \to \Big\{{}^{0^+}\!\sigma^{\parallel}, {}^{0^+}\!\tau^{\parallel}, {}^{0^+}\!\tau^{\perp}, {}^{0^-}\!\sigma^{\parallel}\Big\},$$
$$1 \to \Big\{{}^{1^+}\!\sigma^{\parallel}{}_{qb}, {}^{1^+}\!\sigma^{\perp}{}_{qb}, {}^{1^+}\!\tau^{\parallel}{}_{qb}, {}^{1^-}\!\sigma^{\parallel}{}_{q}, {}^{1^-}\!\sigma^{\perp}{}_{q}, {}^{1^-}\!\tau^{\parallel}{}_{q}, {}^{1^-}\!\tau^{\perp}{}_{q}\Big\}, 2 \to \Big\{{}^{2^+}\!\sigma^{\parallel}{}_{qb}, {}^{2^+}\!\tau^{\parallel}{}_{qb}, {}^{2^-}\!\sigma^{\parallel}{}_{qbc}\Big\}\Big|\rangle$$

$$\langle\Big|\, 0 \to \begin{pmatrix} -\frac{2 t_i}{3} & -\frac{2}{3} i k t_1 & -2 i k t_1 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{t_i}{6} \end{pmatrix}, 1 \to \begin{pmatrix} -t_1 & -t_1 & -2 i k t_1 & 0 & 0 & 0 & 0 \\ -t_1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{t_i}{2} & t_1 & 0 & 2 i k t_1 \\ 0 & 0 & 0 & t_1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}, 2 \to \begin{pmatrix} t_1 & -2 i k t_1 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & \frac{8 t_i}{9} \end{pmatrix}\Big|\rangle$$

$$\left\langle \left| 0 \to \begin{pmatrix} -\frac{2 t_{\cdot_1}}{3} & -\frac{1}{3} i k t_{\cdot_1} & -i k t_{\cdot_1} & 0 \\ \frac{i k t_{\cdot_1}}{3} & 0 & 0 & 0 \\ i k t_{\cdot_1} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{t_{\cdot_1}}{6} \end{pmatrix}, 1 \to \begin{pmatrix} -t_{\cdot_1} & -t_{\cdot_1} & -i k t_{\cdot_1} & 0 & 0 & 0 & 0 \\ -t_{\cdot_1} & 0 & 0 & 0 & 0 & 0 & 0 \\ i k t_{\cdot_1} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{t_{\cdot_1}}{2} & t_{\cdot_1} & 0 & i k t_{\cdot_1} \\ 0 & 0 & 0 & t_{\cdot_1} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -i k t_{\cdot_1} & 0 & 0 & 0 \end{pmatrix}, 2 \to \begin{pmatrix} t_{\cdot_1} & -i k t_{\cdot_1} & 0 \\ i k t_{\cdot_1} & 0 & 0 \\ 0 & 0 & \frac{8 t_{\cdot_1}}{9} \end{pmatrix} \right| \right\rangle$$

$$\left\langle \left| 0 \to \begin{pmatrix} -\frac{2 t_{\cdot_1}}{3 \text{APara0pRescalingSymbol}^2} & -\frac{i k t_{\cdot_1}}{3 \text{APara0pRescalingSymbol} \text{FPara0pRescalingSymbol}} & -\frac{}{\text{APara0pRescalingSymt}} \\ \frac{i k t_{\cdot_1}}{3 \text{APara0pRescalingSymbol} \text{FPara0pRescalingSymbol}} & 0 \\ \frac{i k t_{\cdot_1}}{\text{APara0pRescalingSymbol} \text{FPerp0pRescalingSymbol}} & 0 \\ 0 & 0 \end{pmatrix} \right| \right\rangle$$

$$\left\langle \left| 0 \to \begin{pmatrix} -t_{\cdot_1} & -\frac{i k t_{\cdot_1}}{\sqrt{2}} & -i \sqrt{\frac{3}{2}} k t_{\cdot_1} & 0 \\ \frac{i k t_{\cdot_1}}{\sqrt{2}} & 0 & 0 & 0 \\ i \sqrt{\frac{3}{2}} k t_{\cdot_1} & 0 & 0 & 0 \\ 0 & 0 & 0 & -t_{\cdot_1} \end{pmatrix}, \right| \right\rangle$$

$$1 \to \begin{pmatrix} -\frac{t_{\cdot_1}}{2} & -\frac{t_{\cdot_1}}{\sqrt{2}} & -\frac{i k t_{\cdot_1}}{\sqrt{2}} & 0 & 0 & 0 & 0 \\ -\frac{t_{\cdot_1}}{\sqrt{2}} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i k t_{\cdot_1}}{\sqrt{2}} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{t_{\cdot_1}}{2} & \frac{t_{\cdot_1}}{\sqrt{2}} & 0 & i k t_{\cdot_1} \\ 0 & 0 & 0 & \frac{t_{\cdot_1}}{\sqrt{2}} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -i k t_{\cdot_1} & 0 & 0 & 0 \end{pmatrix}, 2 \to \begin{pmatrix} \frac{t_{\cdot_1}}{2} & -\frac{i k t_{\cdot_1}}{\sqrt{2}} & 0 \\ \frac{i k t_{\cdot_1}}{\sqrt{2}} & 0 & 0 \\ 0 & 0 & \frac{t_{\cdot_1}}{2} \end{pmatrix} \left| \right| \right\rangle$$

$$\left\{ {}^{0^+}_{\cdot} \tau^{\parallel} - {}^{0^+}_{\cdot} \tau^{\perp},\ -i \left(2 k\ {}^{1^-}_{\cdot} \sigma^{\perp}{}^{a} - i\ {}^{1^-}_{\cdot} \tau^{\perp}{}^{a} \right),\ - {}^{1^-}_{\cdot} \tau^{\parallel}{}^{a},\ -i \left(k\ {}^{1^+}_{\cdot} \sigma^{\perp}{}^{a b} - i\ {}^{1^+}_{\cdot} \tau^{\parallel}{}^{a b} \right) \right\}$$

$$\left\langle \left| 0 \to \begin{pmatrix} 0 & -\frac{i}{2\sqrt{2}\,k\,t_1} & -\frac{i\sqrt{\frac{3}{2}}}{2\,k\,t_1} & 0 \\ \frac{i}{2\sqrt{2}\,k\,t_1} & \frac{1}{8k^2t_1} & \frac{\sqrt{3}}{8k^2t_1} & 0 \\ \frac{i\sqrt{\frac{3}{2}}}{2\,k\,t_1} & \frac{\sqrt{3}}{8k^2t_1} & \frac{3}{8k^2t_1} & 0 \\ 0 & 0 & 0 & -\frac{1}{t_1} \end{pmatrix}, \right.$$

$$1 \to \begin{pmatrix} 0 & -\frac{\sqrt{2}}{t_1+k^2t_1} & -\frac{i\sqrt{2}\,k}{t_1+k^2t_1} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{t_1+k^2t_1} & \frac{1}{(1+k^2)^2t_1} & \frac{ik}{(1+k^2)^2t_1} & 0 & 0 & 0 & 0 \\ \frac{i\sqrt{2}\,k}{t_1+k^2t_1} & -\frac{ik}{(1+k^2)^2t_1} & \frac{k^2}{(1+k^2)^2t_1} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{t_1+2k^2t_1} & 0 & \frac{2ik}{t_1+2k^2t_1} \\ 0 & 0 & 0 & \frac{\sqrt{2}}{t_1+2k^2t_1} & \frac{1}{(1+2k^2)^2t_1} & 0 & \frac{i\sqrt{2}\,k}{(1+2k^2)^2t_1} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2ik}{t_1+2k^2t_1} & -\frac{i\sqrt{2}\,k}{(1+2k^2)^2t_1} & 0 & \frac{2k^2}{(1+2k^2)^2t_1} \end{pmatrix}, 2 \to \begin{pmatrix} 0 & -\frac{i\sqrt{2}}{kt_1} & 0 \\ \frac{i\sqrt{2}}{kt_1} & -\frac{1}{k^2t_1} & 0 \\ 0 & 0 & \frac{2}{t_1} \end{pmatrix} \left| \right\rangle$$

$$\left\langle \left| 0 \to \begin{pmatrix} 0 & -\frac{i}{6\,k\,t_1} & -\frac{i}{2\,k\,t_1} & 0 \\ \frac{i}{6\,k\,t_1} & \frac{1}{24k^2t_1} & \frac{1}{8k^2t_1} & 0 \\ \frac{i}{2\,k\,t_1} & \frac{1}{8k^2t_1} & \frac{3}{8k^2t_1} & 0 \\ 0 & 0 & 0 & \frac{1}{6t_1} \end{pmatrix}, \right.$$

$$1 \to \begin{pmatrix} 0 & -\frac{2}{t_1+k^2t_1} & -\frac{2ik}{t_1+k^2t_1} & 0 & 0 & 0 & 0 \\ -\frac{2}{t_1+k^2t_1} & \frac{1}{(1+k^2)^2t_1} & \frac{ik}{(1+k^2)^2t_1} & 0 & 0 & 0 & 0 \\ \frac{2ik}{t_1+k^2t_1} & -\frac{ik}{(1+k^2)^2t_1} & \frac{k^2}{(1+k^2)^2t_1} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{2}{t_1+2k^2t_1} & 0 & \frac{2ik}{t_1+2k^2t_1} \\ 0 & 0 & 0 & \frac{2}{t_1+2k^2t_1} & \frac{2}{(1+2k^2)^2t_1} & 0 & \frac{2ik}{(1+2k^2)^2t_1} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2ik}{t_1+2k^2t_1} & -\frac{2ik}{(1+2k^2)^2t_1} & 0 & \frac{2k^2}{(1+2k^2)^2t_1} \end{pmatrix}, 2 \to \begin{pmatrix} 0 & -\frac{2i}{kt_1} & 0 \\ \frac{2i}{kt_1} & -\frac{1}{k^2t_1} & 0 \\ 0 & 0 & \frac{32}{9t_1} \end{pmatrix} \left| \right\rangle$$

$$\langle \Big| 0 \to \frac{{}^{0^-}\!\sigma^{\parallel}\,{}^{0^-}\!\sigma^{\parallel}\,\dagger}{6\,t_1} + {}^{0^+}\!\tau^{\parallel}\left(-\frac{i\,{}^{0^+}\!\sigma^{\parallel}\,\dagger}{6\,k\,t_1} + \frac{{}^{0^+}\!\tau^{\parallel}\,\dagger}{24\,k^2\,t_1} + \frac{{}^{0^+}\!\tau^{\perp}\,\dagger}{8\,k^2\,t_1}\right) + {}^{0^+}\!\tau^{\perp}\left(-\frac{i\,{}^{0^+}\!\sigma^{\parallel}\,\dagger}{2\,k\,t_1} + \frac{{}^{0^+}\!\tau^{\parallel}\,\dagger}{8\,k^2\,t_1} + \frac{3\,{}^{0^+}\!\tau^{\perp}\,\dagger}{8\,k^2\,t_1}\right) + {}^{0^+}\!\sigma^{\parallel}\left(\frac{i\,{}^{0^+}\!\tau^{\parallel}\,\dagger}{6\,k\,t_1} + \frac{i\,{}^{0^+}\!\tau^{\perp}\,\dagger}{2\,k\,t_1}\right),$$

$$1 \to {}^{1^+}\!\sigma^{\perp}{}_{ab}\left(-\frac{2\,{}^{1^+}\!\sigma^{\parallel}\,\dagger^{ab}}{t_1 + k^2\,t_1} + \frac{{}^{1^+}\!\sigma^{\perp}\,\dagger^{ab}}{(1+k^2)^2\,t_1} - \frac{i\,k\,{}^{1^+}\!\tau^{\parallel}\,\dagger^{ab}}{(1+k^2)^2\,t_1}\right) + {}^{1^+}\!\tau^{\parallel}{}_{ab}\left(-\frac{2\,i\,k\,{}^{1^+}\!\sigma^{\parallel}\,\dagger^{ab}}{t_1 + k^2\,t_1} + \frac{i\,k\,{}^{1^+}\!\sigma^{\perp}\,\dagger^{ab}}{(1+k^2)^2\,t_1} + \frac{k^2\,{}^{1^+}\!\tau^{\parallel}\,\dagger^{ab}}{(1+k^2)^2\,t_1}\right) +$$
$${}^{1^+}\!\sigma^{\parallel}{}_{ab}\left(-\frac{2\,{}^{1^+}\!\sigma^{\perp}\,\dagger^{ab}}{t_1 + k^2\,t_1} + \frac{2\,i\,k\,{}^{1^+}\!\tau^{\parallel}\,\dagger^{ab}}{t_1 + k^2\,t_1}\right) + {}^{1^-}\!\sigma^{\perp}{}_{a}\left(\frac{2\,{}^{1^-}\!\sigma^{\parallel}\,\dagger^{a}}{t_1 + 2\,k^2\,t_1} + \frac{2\,{}^{1^-}\!\sigma^{\perp}\,\dagger^{a}}{(1+2\,k^2)^2\,t_1} - \frac{2\,i\,k\,{}^{1^-}\!\tau^{\perp}\,\dagger^{a}}{(1+2\,k^2)^2\,t_1}\right) +$$
$${}^{1^-}\!\tau^{\perp}{}_{a}\left(\frac{2\,i\,k\,{}^{1^-}\!\sigma^{\parallel}\,\dagger^{a}}{t_1 + 2\,k^2\,t_1} + \frac{2\,i\,k\,{}^{1^-}\!\sigma^{\perp}\,\dagger^{a}}{(1+2\,k^2)^2\,t_1} + \frac{2\,k^2\,{}^{1^-}\!\tau^{\perp}\,\dagger^{a}}{(1+2\,k^2)^2\,t_1}\right) + {}^{1^-}\!\sigma^{\parallel}{}_{a}\left(\frac{2\,{}^{1^-}\!\sigma^{\perp}\,\dagger^{a}}{t_1 + 2\,k^2\,t_1} - \frac{2\,i\,k\,{}^{1^-}\!\tau^{\perp}\,\dagger^{a}}{t_1 + 2\,k^2\,t_1}\right),$$

$$2 \to \frac{32\,{}^{2^-}\!\sigma^{\parallel}{}_{abc}\;{}^{2^-}\!\sigma^{\parallel}\,\dagger^{abc}}{9\,t_1} + \frac{2\,i\,{}^{2^+}\!\sigma^{\parallel}{}_{ab}\;{}^{2^+}\!\tau^{\parallel}\,\dagger^{ab}}{k\,t_1} + {}^{2^+}\!\tau^{\parallel}{}_{ab}\left(-\frac{2\,i\,{}^{2^+}\!\sigma^{\parallel}\,\dagger^{ab}}{k\,t_1} - \frac{{}^{2^+}\!\tau^{\parallel}\,\dagger^{ab}}{k^2\,t_1}\right)\Big| \rangle$$

$$\langle \Big| 0 \to$$
$$\frac{{}^{0^-}\!\sigma^{\parallel}\,{}^{0^-}\!\sigma^{\parallel}\,\dagger}{6\,t_1} - \frac{i\,{}^{0^+}\!\sigma^{\parallel}\,\dagger\,{}^{0^+}\!\tau^{\parallel}}{6\,k\,t_1} + \frac{i\,{}^{0^+}\!\sigma^{\parallel}\,{}^{0^+}\!\tau^{\parallel}\,\dagger}{6\,k\,t_1} + \frac{{}^{0^+}\!\tau^{\parallel}\,{}^{0^+}\!\tau^{\parallel}\,\dagger}{24\,k^2\,t_1} - \frac{i\,{}^{0^+}\!\sigma^{\parallel}\,\dagger\,{}^{0^+}\!\tau^{\perp}}{2\,k\,t_1} + \frac{{}^{0^+}\!\tau^{\parallel}\,\dagger\,{}^{0^+}\!\tau^{\perp}}{8\,k^2\,t_1} + \frac{i\,{}^{0^+}\!\sigma^{\parallel}\,{}^{0^+}\!\tau^{\perp}\,\dagger}{2\,k\,t_1} + \frac{{}^{0^+}\!\tau^{\parallel}\,{}^{0^+}\!\tau^{\perp}\,\dagger}{8\,k^2\,t_1} + \frac{3\,{}^{0^+}\!\tau^{\perp}\,{}^{0^+}\!\tau^{\perp}\,\dagger}{8\,k^2\,t_1},$$

$$1 \to \frac{2\,{}^{1^-}\!\sigma^{\parallel}\,\dagger^{a}\;{}^{1^-}\!\sigma^{\perp}{}_{a}}{t_1 + 2\,k^2\,t_1} + \frac{2\,{}^{1^-}\!\sigma^{\parallel}{}^{a}\;{}^{1^-}\!\sigma^{\perp}\,\dagger_{a}}{t_1 + 2\,k^2\,t_1} + \frac{2\,{}^{1^-}\!\sigma^{\perp}{}^{a}\;{}^{1^-}\!\sigma^{\perp}\,\dagger_{a}}{(1+2\,k^2)^2\,t_1} - \frac{2\,{}^{1^+}\!\sigma^{\parallel}\,\dagger^{ab}\;{}^{1^+}\!\sigma^{\perp}{}_{ab}}{t_1 + k^2\,t_1} -$$
$$\frac{2\,{}^{1^+}\!\sigma^{\parallel}{}^{ab}\;{}^{1^+}\!\sigma^{\perp}\,\dagger_{ab}}{t_1 + k^2\,t_1} + \frac{{}^{1^+}\!\sigma^{\perp}{}^{ab}\;{}^{1^+}\!\sigma^{\perp}\,\dagger_{ab}}{(1+k^2)^2\,t_1} - \frac{2\,i\,k\,{}^{1^+}\!\sigma^{\parallel}\,\dagger^{ab}\;{}^{1^+}\!\tau^{\parallel}{}_{ab}}{t_1 + k^2\,t_1} + \frac{i\,k\,{}^{1^+}\!\sigma^{\perp}\,\dagger^{ab}\;{}^{1^+}\!\tau^{\parallel}{}_{ab}}{(1+k^2)^2\,t_1} +$$
$$\frac{2\,i\,k\,{}^{1^+}\!\sigma^{\parallel}{}^{ab}\;{}^{1^+}\!\tau^{\parallel}\,\dagger_{ab}}{t_1 + k^2\,t_1} - \frac{i\,k\,{}^{1^+}\!\sigma^{\perp}{}^{ab}\;{}^{1^+}\!\tau^{\parallel}\,\dagger_{ab}}{(1+k^2)^2\,t_1} + \frac{k^2\,{}^{1^+}\!\tau^{\parallel}{}^{ab}\;{}^{1^+}\!\tau^{\parallel}\,\dagger_{ab}}{(1+k^2)^2\,t_1} + \frac{2\,i\,k\,{}^{1^-}\!\sigma^{\parallel}\,\dagger^{a}\;{}^{1^-}\!\tau^{\perp}{}_{a}}{t_1 + 2\,k^2\,t_1} +$$
$$\frac{2\,i\,k\,{}^{1^-}\!\sigma^{\perp}\,\dagger^{a}\;{}^{1^-}\!\tau^{\perp}{}_{a}}{(1+2\,k^2)^2\,t_1} - \frac{2\,i\,k\,{}^{1^-}\!\sigma^{\parallel}{}^{a}\;{}^{1^-}\!\tau^{\perp}\,\dagger_{a}}{t_1 + 2\,k^2\,t_1} - \frac{2\,i\,k\,{}^{1^-}\!\sigma^{\perp}{}^{a}\;{}^{1^-}\!\tau^{\perp}\,\dagger_{a}}{(1+2\,k^2)^2\,t_1} + \frac{2\,k^2\,{}^{1^-}\!\tau^{\perp}{}^{a}\;{}^{1^-}\!\tau^{\perp}\,\dagger_{a}}{(1+2\,k^2)^2\,t_1},$$

$$2 \to \frac{32\,{}^{2^-}\!\sigma^{\parallel}{}^{abc}\;{}^{2^-}\!\sigma^{\parallel}\,\dagger_{abc}}{9\,t_1} - \frac{2\,i\,{}^{2^+}\!\sigma^{\parallel}\,\dagger^{ab}\;{}^{2^+}\!\tau^{\parallel}{}_{ab}}{k\,t_1} + \frac{2\,i\,{}^{2^+}\!\sigma^{\parallel}{}^{ab}\;{}^{2^+}\!\tau^{\parallel}\,\dagger_{ab}}{k\,t_1} - \frac{{}^{2^+}\!\tau^{\parallel}{}^{ab}\;{}^{2^+}\!\tau^{\parallel}\,\dagger_{ab}}{k^2\,t_1}\Big| \rangle$$

The (possibly singular) a-matrices associated with the Lagrangian, as defined below Eq. (18) of arXiv:1812.02675:

$$\left\{\begin{pmatrix} -t_1 & -\frac{i k t_1}{\sqrt{2}} & -i\sqrt{\frac{3}{2}}\, k t_1 & 0 \\ \frac{i k t_1}{\sqrt{2}} & 0 & 0 & 0 \\ i\sqrt{\frac{3}{2}}\, k t_1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -t_1 \end{pmatrix}, \begin{pmatrix} -\frac{t_1}{2} & -\frac{t_1}{\sqrt{2}} & -\frac{i k t_1}{\sqrt{2}} & 0 & 0 & 0 & 0 \\ -\frac{t_1}{\sqrt{2}} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i k t_1}{\sqrt{2}} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{t_1}{2} & \frac{t_1}{\sqrt{2}} & 0 & i k t_1 \\ 0 & 0 & 0 & \frac{t_1}{\sqrt{2}} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -i k t_1 & 0 & 0 & 0 \end{pmatrix}, \begin{pmatrix} \frac{t_1}{2} & -\frac{i k t_1}{\sqrt{2}} & 0 \\ \frac{i k t_1}{\sqrt{2}} & 0 & 0 \\ 0 & 0 & \frac{t_1}{2} \end{pmatrix}\right\}$$

Gauge constraints on source currents:

$$\left\{{}^{0^+}_{\cdot}\tau^{\parallel} == {}^{0^+}_{\cdot}\tau^{\perp},\ -2 i k\ {}^{1^-}_{\cdot}\sigma^{\perp\,a} == {}^{1^-}_{\cdot}\tau^{\perp\,a},\ {}^{1^-}_{\cdot}\tau^{\parallel\,a} == 0,\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,a b} == {}^{1^+}_{\cdot}\tau^{\parallel\,a b}\right\}$$

The Drazin (Moore-Penrose) inverses of these a-matrices, which are functionally analogous to the inverse b-matrices described below Eq. (21) of arXiv:1812.02675:

$$\left\{\begin{pmatrix} 0 & -\frac{i}{2\sqrt{2}\, k t_1} & -\frac{i\sqrt{\frac{3}{2}}}{2 k t_1} & 0 \\ \frac{i}{2\sqrt{2}\, k t_1} & \frac{1}{8 k^2 t_1} & \frac{\sqrt{3}}{8 k^2 t_1} & 0 \\ \frac{i\sqrt{\frac{3}{2}}}{2 k t_1} & \frac{\sqrt{3}}{8 k^2 t_1} & \frac{3}{8 k^2 t_1} & 0 \\ 0 & 0 & 0 & -\frac{1}{t_1} \end{pmatrix},\right.$$

$$\left.\begin{pmatrix} 0 & -\frac{\sqrt{2}}{t_1 + k^2 t_1} & -\frac{i\sqrt{2}\, k}{t_1 + k^2 t_1} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{t_1 + k^2 t_1} & \frac{1}{(1+k^2)^2 t_1} & \frac{i k}{(1+k^2)^2 t_1} & 0 & 0 & 0 & 0 \\ \frac{i\sqrt{2}\, k}{t_1 + k^2 t_1} & -\frac{i k}{(1+k^2)^2 t_1} & \frac{k^2}{(1+k^2)^2 t_1} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{t_1 + 2 k^2 t_1} & 0 & \frac{2 i k}{t_1 + 2 k^2 t_1} \\ 0 & 0 & 0 & \frac{\sqrt{2}}{t_1 + 2 k^2 t_1} & \frac{1}{(1+2 k^2)^2 t_1} & 0 & \frac{i\sqrt{2}\, k}{(1+2 k^2)^2 t_1} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2 i k}{t_1 + 2 k^2 t_1} & -\frac{i\sqrt{2}\, k}{(1+2 k^2)^2 t_1} & 0 & \frac{2 k^2}{(1+2 k^2)^2 t_1} \end{pmatrix}, \begin{pmatrix} 0 & -\frac{i\sqrt{2}}{k t_1} & 0 \\ \frac{i\sqrt{2}}{k t_1} & -\frac{1}{k^2 t_1} & 0 \\ 0 & 0 & \frac{2}{t_1} \end{pmatrix}\right\}$$

ConstraintComponentList

$$\left\{{}^{0^+}_{\cdot}\tau^{\parallel} - {}^{0^+}_{\cdot}\tau^{\perp},\ -2 i k\ {}^{1^-}_{\cdot}\sigma^{\perp\,0} - {}^{1^-}_{\cdot}\tau^{\perp\,0},\ -2 i k\ {}^{1^-}_{\cdot}\sigma^{\perp\,1} - {}^{1^-}_{\cdot}\tau^{\perp\,1},\ -2 i k\ {}^{1^-}_{\cdot}\sigma^{\perp\,2} - {}^{1^-}_{\cdot}\tau^{\perp\,2},\ -2 i k\ {}^{1^-}_{\cdot}\sigma^{\perp\,3} - {}^{1^-}_{\cdot}\tau^{\perp\,3},\right.$$

$$-{}^{1^-}_{\cdot}\tau^{\parallel\,0},\ -{}^{1^-}_{\cdot}\tau^{\parallel\,1},\ -{}^{1^-}_{\cdot}\tau^{\parallel\,2},\ -{}^{1^-}_{\cdot}\tau^{\parallel\,3},\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,01} - {}^{1^+}_{\cdot}\tau^{\parallel\,01},\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,02} - {}^{1^+}_{\cdot}\tau^{\parallel\,02},\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,03} - {}^{1^+}_{\cdot}\tau^{\parallel\,03},$$

$$i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,01} + {}^{1^+}_{\cdot}\tau^{\parallel\,01},\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,12} - {}^{1^+}_{\cdot}\tau^{\parallel\,12},\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,13} - {}^{1^+}_{\cdot}\tau^{\parallel\,13},\ i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,02} + {}^{1^+}_{\cdot}\tau^{\parallel\,02},$$

$$\left.i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,12} + {}^{1^+}_{\cdot}\tau^{\parallel\,12},\ -i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,23} - {}^{1^+}_{\cdot}\tau^{\parallel\,23},\ i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,03} + {}^{1^+}_{\cdot}\tau^{\parallel\,03},\ i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,13} + {}^{1^+}_{\cdot}\tau^{\parallel\,13},\ i k\ {}^{1^+}_{\cdot}\sigma^{\perp\,23} + {}^{1^+}_{\cdot}\tau^{\parallel\,23}\right\}$$

ConstraintComponentList

$$\Big\{ {}^{0^+}\cdot\tau^{\parallel} - {}^{0^+}\cdot\tau^{\perp},\ -2\,i\,k\ e_{z\$10453}^{\ 0}\ {}^{1^-}\cdot\sigma^{\perp z\$10453} - e_{z\$10454}^{\ 0}\ {}^{1^-}\cdot\tau^{\perp z\$10454},$$

$$-2\,i\,k\ e_{z\$10455}^{\ 1}\ {}^{1^-}\cdot\sigma^{\perp z\$10455} - e_{z\$10456}^{\ 1}\ {}^{1^-}\cdot\tau^{\perp z\$10456},$$

$$-2\,i\,k\ e_{z\$10457}^{\ 2}\ {}^{1^-}\cdot\sigma^{\perp z\$10457} - e_{z\$10458}^{\ 2}\ {}^{1^-}\cdot\tau^{\perp z\$10458},$$

$$-2\,i\,k\ e_{z\$10459}^{\ 3}\ {}^{1^-}\cdot\sigma^{\perp z\$10459} - e_{z\$10460}^{\ 3}\ {}^{1^-}\cdot\tau^{\perp z\$10460},\ -e_{z\$10461}^{\ 0}\ {}^{1^-}\cdot\tau^{\parallel z\$10461},$$

$$-e_{z\$10462}^{\ 1}\ {}^{1^-}\cdot\tau^{\parallel z\$10462},\ -e_{z\$10463}^{\ 2}\ {}^{1^-}\cdot\tau^{\parallel z\$10463},\ -e_{z\$10464}^{\ 3}\ {}^{1^-}\cdot\tau^{\parallel z\$10464},$$

$$-i\,k\ e_{z\$10465}^{\ 0}\ e_{z\$10466}^{\ 1}\ {}^{1^+}\cdot\sigma^{\perp z\$10465 z\$10466} - e_{z\$10467}^{\ 0}\ e_{z\$10468}^{\ 1}\ {}^{1^+}\cdot\tau^{\parallel z\$10467 z\$10468},$$

$$-i\,k\ e_{z\$10469}^{\ 0}\ e_{z\$10470}^{\ 2}\ {}^{1^+}\cdot\sigma^{\perp z\$10469 z\$10470} - e_{z\$10471}^{\ 0}\ e_{z\$10472}^{\ 2}\ {}^{1^+}\cdot\tau^{\parallel z\$10471 z\$10472},$$

$$-i\,k\ e_{z\$10473}^{\ 0}\ e_{z\$10474}^{\ 3}\ {}^{1^+}\cdot\sigma^{\perp z\$10473 z\$10474} - e_{z\$10475}^{\ 0}\ e_{z\$10476}^{\ 3}\ {}^{1^+}\cdot\tau^{\parallel z\$10475 z\$10476},$$

$$i\,k\ e_{z\$10477}^{\ 0}\ e_{z\$10478}^{\ 1}\ {}^{1^+}\cdot\sigma^{\perp z\$10477 z\$10478} + e_{z\$10479}^{\ 0}\ e_{z\$10480}^{\ 1}\ {}^{1^+}\cdot\tau^{\parallel z\$10479 z\$10480},$$

$$-i\,k\ e_{z\$10481}^{\ 1}\ e_{z\$10482}^{\ 2}\ {}^{1^+}\cdot\sigma^{\perp z\$10481 z\$10482} - e_{z\$10483}^{\ 1}\ e_{z\$10484}^{\ 2}\ {}^{1^+}\cdot\tau^{\parallel z\$10483 z\$10484},$$

$$-i\,k\ e_{z\$10485}^{\ 1}\ e_{z\$10486}^{\ 3}\ {}^{1^+}\cdot\sigma^{\perp z\$10485 z\$10486} - e_{z\$10487}^{\ 1}\ e_{z\$10488}^{\ 3}\ {}^{1^+}\cdot\tau^{\parallel z\$10487 z\$10488},$$

$$i\,k\ e_{z\$10489}^{\ 0}\ e_{z\$10490}^{\ 2}\ {}^{1^+}\cdot\sigma^{\perp z\$10489 z\$10490} + e_{z\$10491}^{\ 0}\ e_{z\$10492}^{\ 2}\ {}^{1^+}\cdot\tau^{\parallel z\$10491 z\$10492},$$

$$i\,k\ e_{z\$10493}^{\ 1}\ e_{z\$10494}^{\ 2}\ {}^{1^+}\cdot\sigma^{\perp z\$10493 z\$10494} + e_{z\$10495}^{\ 1}\ e_{z\$10496}^{\ 2}\ {}^{1^+}\cdot\tau^{\parallel z\$10495 z\$10496},$$

$$-i\,k\ e_{z\$10497}^{\ 2}\ e_{z\$10498}^{\ 3}\ {}^{1^+}\cdot\sigma^{\perp z\$10497 z\$10498} - e_{z\$10499}^{\ 2}\ e_{z\$10500}^{\ 3}\ {}^{1^+}\cdot\tau^{\parallel z\$10499 z\$10500},$$

$$i\,k\ e_{z\$10501}^{\ 0}\ e_{z\$10502}^{\ 3}\ {}^{1^+}\cdot\sigma^{\perp z\$10501 z\$10502} + e_{z\$10503}^{\ 0}\ e_{z\$10504}^{\ 3}\ {}^{1^+}\cdot\tau^{\parallel z\$10503 z\$10504},$$

$$i\,k\ e_{z\$10505}^{\ 1}\ e_{z\$10506}^{\ 3}\ {}^{1^+}\cdot\sigma^{\perp z\$10505 z\$10506} + e_{z\$10507}^{\ 1}\ e_{z\$10508}^{\ 3}\ {}^{1^+}\cdot\tau^{\parallel z\$10507 z\$10508},$$

$$i\,k\ e_{z\$10509}^{\ 2}\ e_{z\$10510}^{\ 3}\ {}^{1^+}\cdot\sigma^{\perp z\$10509 z\$10510} + e_{z\$10511}^{\ 2}\ e_{z\$10512}^{\ 3}\ {}^{1^+}\cdot\tau^{\parallel z\$10511 z\$10512}\Big\}$$

ConstraintComponentList

$$\Big\{\left(-\mathcal{E}^2-p^2\right)\,\tau(\Delta+\mathcal{K})_{00}-2\,\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{03}+\left(-\mathcal{E}^2+p^2\right)\,\tau(\Delta+\mathcal{K})_{11}+$$
$$\left(-\mathcal{E}^2+p^2\right)\,\tau(\Delta+\mathcal{K})_{22}-2\,\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{30}+\left(-\mathcal{E}^2-p^2\right)\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$-2\,i\left(\mathcal{E}^3-\mathcal{E}\,p^2\right)\,\sigma_{003}+2\,i\,p\left(-\mathcal{E}^2+p^2\right)\,\sigma_{303}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+p^2\,\tau(\Delta+\mathcal{K})_{03}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$-2\,i\,\mathcal{E}^2\,\sigma_{001}+2\,i\,\mathcal{E}\,p\,\sigma_{013}-2\,i\,\mathcal{E}\,p\,\sigma_{301}+2\,i\,p^2\,\sigma_{313}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{10}+p\,\tau(\Delta+\mathcal{K})_{13}==0,$$
$$-2\,i\,\mathcal{E}^2\,\sigma_{002}+2\,i\,\mathcal{E}\,p\,\sigma_{023}-2\,i\,\mathcal{E}\,p\,\sigma_{302}+2\,i\,p^2\,\sigma_{323}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{20}+p\,\tau(\Delta+\mathcal{K})_{23}==0,$$
$$-2\,i\left(\mathcal{E}^3-\mathcal{E}\,p^2\right)\,\sigma_{003}+2\,i\,p\left(-\mathcal{E}^2+p^2\right)\,\sigma_{303}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+p^2\,\tau(\Delta+\mathcal{K})_{03}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{03}+p^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{01}+p\,\tau(\Delta+\mathcal{K})_{31}==0,\ \mathcal{E}\,\tau(\Delta+\mathcal{K})_{02}+p\,\tau(\Delta+\mathcal{K})_{32}==0,$$
$$\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{03}+p^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,\ -2\,i\,\mathcal{E}\,p\,\sigma_{001}+2\,i\,\mathcal{E}^2\,\sigma_{013}-$$
$$2\,i\,p^2\,\sigma_{301}+2\,i\,\mathcal{E}\,p\,\sigma_{313}-p\,\tau(\Delta+\mathcal{K})_{01}+p\,\tau(\Delta+\mathcal{K})_{10}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,$$
$$-2\,i\,\mathcal{E}\,p\,\sigma_{002}+2\,i\,\mathcal{E}^2\,\sigma_{023}-2\,i\,p^2\,\sigma_{302}+2\,i\,\mathcal{E}\,p\,\sigma_{323}-p\,\tau(\Delta+\mathcal{K})_{02}+p\,\tau(\Delta+\mathcal{K})_{20}+$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0,\ \text{True},\ 2\,i\,\mathcal{E}\,p\,\sigma_{001}-2\,i\,\mathcal{E}^2\,\sigma_{013}+2\,i\,p^2\,\sigma_{301}-$$
$$2\,i\,\mathcal{E}\,p\,\sigma_{313}+p\,\tau(\Delta+\mathcal{K})_{01}-p\,\tau(\Delta+\mathcal{K})_{10}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,$$
$$-2\,i\,\mathcal{E}\,\sigma_{012}-2\,i\,p\,\sigma_{312}-\tau(\Delta+\mathcal{K})_{12}+\tau(\Delta+\mathcal{K})_{21}==0,\ 2\,i\,\mathcal{E}\,p\,\sigma_{001}-2\,i\,\mathcal{E}^2\,\sigma_{013}+$$
$$2\,i\,p^2\,\sigma_{301}-2\,i\,\mathcal{E}\,p\,\sigma_{313}+p\,\tau(\Delta+\mathcal{K})_{01}-p\,\tau(\Delta+\mathcal{K})_{10}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,$$
$$2\,i\,\mathcal{E}\,p\,\sigma_{002}-2\,i\,\mathcal{E}^2\,\sigma_{023}+2\,i\,p^2\,\sigma_{302}-2\,i\,\mathcal{E}\,p\,\sigma_{323}+p\,\tau(\Delta+\mathcal{K})_{02}-p\,\tau(\Delta+\mathcal{K})_{20}-$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0,\ 2\,i\,\mathcal{E}\,\sigma_{012}+2\,i\,p\,\sigma_{312}+\tau(\Delta+\mathcal{K})_{12}-\tau(\Delta+\mathcal{K})_{21}==0,$$
$$2\,i\,\mathcal{E}\,p\,\sigma_{002}-2\,i\,\mathcal{E}^2\,\sigma_{023}+2\,i\,p^2\,\sigma_{302}-2\,i\,\mathcal{E}\,p\,\sigma_{323}+p\,\tau(\Delta+\mathcal{K})_{02}-p\,\tau(\Delta+\mathcal{K})_{20}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}+$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0,\ \text{True},\ -2\,i\,\mathcal{E}\,p\,\sigma_{001}+2\,i\,\mathcal{E}^2\,\sigma_{013}-2\,i\,p^2\,\sigma_{301}+2\,i\,\mathcal{E}\,p\,\sigma_{313}-$$
$$p\,\tau(\Delta+\mathcal{K})_{01}+p\,\tau(\Delta+\mathcal{K})_{10}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,\ -2\,i\,\mathcal{E}\,p\,\sigma_{002}+2\,i\,\mathcal{E}^2\,\sigma_{023}-$$
$$2\,i\,p^2\,\sigma_{302}+2\,i\,\mathcal{E}\,p\,\sigma_{323}-p\,\tau(\Delta+\mathcal{K})_{02}+p\,\tau(\Delta+\mathcal{K})_{20}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0\Big\}$$

ConstraintComponentList

$$\Big\{\left(-\mathcal{E}^2-p^2\right)\,\tau(\Delta+\mathcal{K})_{00}-2\,\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{03}+\left(-\mathcal{E}^2+p^2\right)\,\tau(\Delta+\mathcal{K})_{11}+$$
$$\left(-\mathcal{E}^2+p^2\right)\,\tau(\Delta+\mathcal{K})_{22}-2\,\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{30}+\left(-\mathcal{E}^2-p^2\right)\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$-2\,i\left(\mathcal{E}^3-\mathcal{E}\,p^2\right)\,\sigma_{003}+2\,i\,p\left(-\mathcal{E}^2+p^2\right)\,\sigma_{303}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+p^2\,\tau(\Delta+\mathcal{K})_{03}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$-2\,i\,\mathcal{E}^2\,\sigma_{001}+2\,i\,\mathcal{E}\,p\,\sigma_{013}-2\,i\,\mathcal{E}\,p\,\sigma_{301}+2\,i\,p^2\,\sigma_{313}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{10}+p\,\tau(\Delta+\mathcal{K})_{13}==0,$$
$$-2\,i\,\mathcal{E}^2\,\sigma_{002}+2\,i\,\mathcal{E}\,p\,\sigma_{023}-2\,i\,\mathcal{E}\,p\,\sigma_{302}+2\,i\,p^2\,\sigma_{323}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{20}+p\,\tau(\Delta+\mathcal{K})_{23}==0,$$
$$-2\,i\left(\mathcal{E}^3-\mathcal{E}\,p^2\right)\,\sigma_{003}+2\,i\,p\left(-\mathcal{E}^2+p^2\right)\,\sigma_{303}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+p^2\,\tau(\Delta+\mathcal{K})_{03}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{03}+p^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{01}+p\,\tau(\Delta+\mathcal{K})_{31}==0,\ \mathcal{E}\,\tau(\Delta+\mathcal{K})_{02}+p\,\tau(\Delta+\mathcal{K})_{32}==0,$$
$$\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{00}+\mathcal{E}^2\,\tau(\Delta+\mathcal{K})_{03}+p^2\,\tau(\Delta+\mathcal{K})_{30}+\mathcal{E}\,p\,\tau(\Delta+\mathcal{K})_{33}==0,\ -2\,i\,\mathcal{E}\,p\,\sigma_{001}+2\,i\,\mathcal{E}^2\,\sigma_{013}-$$
$$2\,i\,p^2\,\sigma_{301}+2\,i\,\mathcal{E}\,p\,\sigma_{313}-p\,\tau(\Delta+\mathcal{K})_{01}+p\,\tau(\Delta+\mathcal{K})_{10}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,$$
$$-2\,i\,\mathcal{E}\,p\,\sigma_{002}+2\,i\,\mathcal{E}^2\,\sigma_{023}-2\,i\,p^2\,\sigma_{302}+2\,i\,\mathcal{E}\,p\,\sigma_{323}-p\,\tau(\Delta+\mathcal{K})_{02}+p\,\tau(\Delta+\mathcal{K})_{20}+$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0,\ 2\,i\,\mathcal{E}\,p\,\sigma_{001}-2\,i\,\mathcal{E}^2\,\sigma_{013}+2\,i\,p^2\,\sigma_{301}-$$
$$2\,i\,\mathcal{E}\,p\,\sigma_{313}+p\,\tau(\Delta+\mathcal{K})_{01}-p\,\tau(\Delta+\mathcal{K})_{10}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,$$
$$-2\,i\,\mathcal{E}\,\sigma_{012}-2\,i\,p\,\sigma_{312}-\tau(\Delta+\mathcal{K})_{12}+\tau(\Delta+\mathcal{K})_{21}==0,\ 2\,i\,\mathcal{E}\,p\,\sigma_{001}-2\,i\,\mathcal{E}^2\,\sigma_{013}+$$
$$2\,i\,p^2\,\sigma_{301}-2\,i\,\mathcal{E}\,p\,\sigma_{313}+p\,\tau(\Delta+\mathcal{K})_{01}-p\,\tau(\Delta+\mathcal{K})_{10}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,$$
$$2\,i\,\mathcal{E}\,p\,\sigma_{002}-2\,i\,\mathcal{E}^2\,\sigma_{023}+2\,i\,p^2\,\sigma_{302}-2\,i\,\mathcal{E}\,p\,\sigma_{323}+p\,\tau(\Delta+\mathcal{K})_{02}-p\,\tau(\Delta+\mathcal{K})_{20}-$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0,\ 2\,i\,\mathcal{E}\,\sigma_{012}+2\,i\,p\,\sigma_{312}+\tau(\Delta+\mathcal{K})_{12}-\tau(\Delta+\mathcal{K})_{21}==0,$$
$$2\,i\,\mathcal{E}\,p\,\sigma_{002}-2\,i\,\mathcal{E}^2\,\sigma_{023}+2\,i\,p^2\,\sigma_{302}-2\,i\,\mathcal{E}\,p\,\sigma_{323}+p\,\tau(\Delta+\mathcal{K})_{02}-p\,\tau(\Delta+\mathcal{K})_{20}-$$
$$\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0,\ -2\,i\,\mathcal{E}\,p\,\sigma_{001}+2\,i\,\mathcal{E}^2\,\sigma_{013}-2\,i\,p^2\,\sigma_{301}+2\,i\,\mathcal{E}\,p\,\sigma_{313}-$$
$$p\,\tau(\Delta+\mathcal{K})_{01}+p\,\tau(\Delta+\mathcal{K})_{10}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{13}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{31}==0,\ -2\,i\,\mathcal{E}\,p\,\sigma_{002}+2\,i\,\mathcal{E}^2\,\sigma_{023}-$$
$$2\,i\,p^2\,\sigma_{302}+2\,i\,\mathcal{E}\,p\,\sigma_{323}-p\,\tau(\Delta+\mathcal{K})_{02}+p\,\tau(\Delta+\mathcal{K})_{20}+\mathcal{E}\,\tau(\Delta+\mathcal{K})_{23}-\mathcal{E}\,\tau(\Delta+\mathcal{K})_{32}==0\Big\}$$

SourceComponents

$$\Big\{\sigma_{001},\ \sigma_{002},\ \sigma_{003},\ \sigma_{012},\ \sigma_{013},\ \sigma_{023},\ \sigma_{101},\ \sigma_{102},\ \sigma_{103},\ \sigma_{112},\ \sigma_{113},\ \sigma_{123},$$
$$\sigma_{201},\ \sigma_{202},\ \sigma_{203},\ \sigma_{212},\ \sigma_{213},\ \sigma_{223},\ \sigma_{301},\ \sigma_{302},\ \sigma_{303},\ \sigma_{312},\ \sigma_{313},\ \sigma_{323},$$
$$\tau(\Delta+\mathcal{K})_{00},\ \tau(\Delta+\mathcal{K})_{01},\ \tau(\Delta+\mathcal{K})_{02},\ \tau(\Delta+\mathcal{K})_{03},\ \tau(\Delta+\mathcal{K})_{10},\ \tau(\Delta+\mathcal{K})_{11},\ \tau(\Delta+\mathcal{K})_{12},\ \tau(\Delta+\mathcal{K})_{13},$$
$$\tau(\Delta+\mathcal{K})_{20},\ \tau(\Delta+\mathcal{K})_{21},\ \tau(\Delta+\mathcal{K})_{22},\ \tau(\Delta+\mathcal{K})_{23},\ \tau(\Delta+\mathcal{K})_{30},\ \tau(\Delta+\mathcal{K})_{31},\ \tau(\Delta+\mathcal{K})_{32},\ \tau(\Delta+\mathcal{K})_{33}\Big\}$$

UnscaledNullSpace

$$\Big\{\{0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,$$
$$0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ -1,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 1\},$$
$$\Big\{0,\ -\frac{i\,p}{2\,\mathcal{E}^2},\ 0,\ 0,\ 0,\ -\frac{i}{2\,\mathcal{E}},\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,$$

$$-\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0\Big\}, \Big\{-\frac{i\,p}{2\,\mathcal{E}^2}, 0, 0, 0, -\frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0\Big\},$$

$$\Big\{0, 0, -\frac{i\,(\mathcal{E}^2 - p^2)}{2\,\mathcal{E}^3}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, -\frac{2\,p}{\mathcal{E}}, 0, 0, \frac{p^2}{\mathcal{E}^2}, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0\Big\},$$

$$\Big\{0, 0, 0, 0, 0, \frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0\Big\}, \Big\{0, 0, \frac{i\,p}{2\,\mathcal{E}^2}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -1, 0, 0, \frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0\Big\},$$

$$\Big\{0, 0, 0, -\frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0\Big\}, \Big\{0, -\frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0\Big\},$$

$$\Big\{0, 0, 0, 0, \frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0\Big\}, \Big\{0, 0, 0, \frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0\Big\},$$

$$\Big\{0, 0, \frac{i\,p}{2\,\mathcal{E}^2}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -1, 0, 0,$$

$$\frac{p}{\mathcal{E}}, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\Big\}, \Big\{-\frac{i}{2\,\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\Big\},$$

$$\Big\{0, 0, 0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\Big\}, \Big\{0, 0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\Big\},$$

$$\Big\{0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\Big\}, \Big\{0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$\left\{0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\right\},$$

$$\left\{0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$\left.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\right\}, \left\{-\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$\left.0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\right\},$$

$$\{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$
$$\{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$
$$\{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$
$$\{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$
$$\{0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$
$$\{0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0,$$
$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}\}$$

RescaledNullSpace

$$\left\{\{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$\left.0, 0, 0, 0, 0, 0, 0, -p, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, p\}\right.,$$

$$\left\{0, -\frac{i p^2}{2 \mathcal{E}^2}, 0, 0, 0, -\frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$\left.-\frac{p^2}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, p, 0\right\}, \left\{-\frac{i p^2}{2 \mathcal{E}^2}, 0, 0, 0, -\frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0,\right.$$

$$\left.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -\frac{p^2}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, p, 0, 0\right\},$$

$$\left\{0, 0, -\frac{i p \left(\mathcal{E}^2 - p^2\right)}{2 \mathcal{E}^3}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$\left.0, 0, 0, 0, -\frac{2 p^2}{\mathcal{E}}, 0, 0, \frac{p^3}{\mathcal{E}^2}, 0, 0, 0, 0, 0, 0, 0, 0, p, 0, 0, 0\right\},$$

$$\left\{0, 0, 0, 0, 0, \frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$\{0, 0, 0, 0, 0, 0, 0, 0, p, 0, 0, 0, 0\}, \left\{0, 0, \frac{i p^2}{2 \mathcal{E}^2}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -p, 0, 0, \frac{p^2}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, p, 0, 0, 0, 0, 0\right\},$$

$$\left\{0, 0, 0, -\frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, p, 0, 0, 0, 0, 0, 0\}, \left\{0, -\frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, p, 0, 0, 0, 0, 0, 0, 0\},$$

$$\left\{0, 0, 0, 0, \frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, p, 0, 0, 0, 0, 0, 0, 0, 0\}, \left\{0, 0, 0, \frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, p, 0, 0, 0, 0, 0, 0, 0\},$$

$$\left\{0, 0, \frac{i p^2}{2 \mathcal{E}^2}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -p, 0, 0,\right.$$

$$\frac{p^2}{\mathcal{E}}, 0, p, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \left\{-\frac{i p}{2 \mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, p, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$

$$\left\{0, 0, 0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \left\{0, 0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$

$$\left\{0, 0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \left\{0, 0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$

$$\left\{0, -\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \left\{-\frac{p}{\mathcal{E}}, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,\right.$$

$$0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$

$$\{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\}, \{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,$$

$$0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0\},$$

```
{{0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0},
 {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}, {0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
  0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0}}
```

SourceComponentsToFreeSourceVariables

$$\Big\{\sigma_{001} \to -\frac{i\,p\,\chi_{12}}{2\,\varepsilon} - \frac{p\,\chi_{18}}{\varepsilon} - \frac{i\,p^2\,\chi_3}{2\,\varepsilon^2},\ \sigma_{002} \to -\frac{p\,\chi_{17}}{\varepsilon} - \frac{i\,p^2\,\chi_2}{2\,\varepsilon^2} - \frac{i\,p\,\chi_8}{2\,\varepsilon},$$

$$\sigma_{003} \to \frac{i\,p^2\,\chi_{11}}{2\,\varepsilon^2} - \frac{p\,\chi_{16}}{\varepsilon} - \frac{i\,p\,(\varepsilon^2 - p^2)\,\chi_4}{2\,\varepsilon^3} + \frac{i\,p^2\,\chi_6}{2\,\varepsilon^2},\ \sigma_{012} \to \frac{i\,p\,\chi_{10}}{2\,\varepsilon} - \frac{p\,\chi_{15}}{\varepsilon} - \frac{i\,p\,\chi_7}{2\,\varepsilon},$$

$$\sigma_{013} \to -\frac{p\,\chi_{14}}{\varepsilon} - \frac{i\,p\,\chi_3}{2\,\varepsilon} + \frac{i\,p\,\chi_9}{2\,\varepsilon},\ \sigma_{023} \to -\frac{p\,\chi_{13}}{\varepsilon} - \frac{i\,p\,\chi_2}{2\,\varepsilon} + \frac{i\,p\,\chi_5}{2\,\varepsilon},\ \sigma_{101} \to \chi_{30},\ \sigma_{102} \to \chi_{29},$$

$$\sigma_{103} \to \chi_{28},\ \sigma_{112} \to \chi_{27},\ \sigma_{113} \to \chi_{26},\ \sigma_{123} \to \chi_{25},\ \sigma_{201} \to \chi_{24},\ \sigma_{202} \to \chi_{23},\ \sigma_{203} \to \chi_{22},$$

$$\sigma_{212} \to \chi_{21},\ \sigma_{213} \to \chi_{20},\ \sigma_{223} \to \chi_{19},\ \sigma_{301} \to \chi_{18},\ \sigma_{302} \to \chi_{17},\ \sigma_{303} \to \chi_{16},\ \sigma_{312} \to \chi_{15},$$

$$\sigma_{313} \to \chi_{14},\ \sigma_{323} \to \chi_{13},\ \tau\,(\Delta{+}\mathcal{K})_{00} \to -p\,\chi_1 - p\,\chi_{11} - \frac{2\,p^2\,\chi_4}{\varepsilon} - p\,\chi_6,\ \tau\,(\Delta{+}\mathcal{K})_{01} \to -\frac{p^2\,\chi_3}{\varepsilon},$$

$$\tau\,(\Delta{+}\mathcal{K})_{02} \to -\frac{p^2\,\chi_2}{\varepsilon},\ \tau\,(\Delta{+}\mathcal{K})_{03} \to \frac{p^2\,\chi_{11}}{\varepsilon} + \frac{p^3\,\chi_4}{\varepsilon^2} + \frac{p^2\,\chi_6}{\varepsilon},\ \tau\,(\Delta{+}\mathcal{K})_{10} \to p\,\chi_{12},\ \tau\,(\Delta{+}\mathcal{K})_{11} \to p\,\chi_{11},$$

$$\tau\,(\Delta{+}\mathcal{K})_{12} \to p\,\chi_{10},\ \tau\,(\Delta{+}\mathcal{K})_{13} \to p\,\chi_9,\ \tau\,(\Delta{+}\mathcal{K})_{20} \to p\,\chi_8,\ \tau\,(\Delta{+}\mathcal{K})_{21} \to p\,\chi_7,\ \tau\,(\Delta{+}\mathcal{K})_{22} \to p\,\chi_6,$$

$$\tau\,(\Delta{+}\mathcal{K})_{23} \to p\,\chi_5,\ \tau\,(\Delta{+}\mathcal{K})_{30} \to p\,\chi_4,\ \tau\,(\Delta{+}\mathcal{K})_{31} \to p\,\chi_3,\ \tau\,(\Delta{+}\mathcal{K})_{32} \to p\,\chi_2,\ \tau\,(\Delta{+}\mathcal{K})_{33} \to p\,\chi_1,$$

$$\sigma\dagger_{001} \to \frac{i\,p\,\chi_{12}\dagger}{2\,\varepsilon} - \frac{p\,\chi_{18}\dagger}{\varepsilon} + \frac{i\,p^2\,\chi_3\dagger}{2\,\varepsilon^2},\ \sigma\dagger_{002} \to -\frac{p\,\chi_{17}\dagger}{\varepsilon} + \frac{i\,p^2\,\chi_2\dagger}{2\,\varepsilon^2} + \frac{i\,p\,\chi_8\dagger}{2\,\varepsilon},$$

$$\sigma\dagger_{003} \to -\frac{i\,p^2\,\chi_{11}\dagger}{2\,\varepsilon^2} - \frac{p\,\chi_{16}\dagger}{\varepsilon} + \frac{i\,p\,(\varepsilon^2 - p^2)\,\chi_4\dagger}{2\,\varepsilon^3} - \frac{i\,p^2\,\chi_6\dagger}{2\,\varepsilon^2},\ \sigma\dagger_{012} \to -\frac{i\,p\,\chi_{10}\dagger}{2\,\varepsilon} - \frac{p\,\chi_{15}\dagger}{\varepsilon} + \frac{i\,p\,\chi_7\dagger}{2\,\varepsilon},$$

$$\sigma\dagger_{013} \to -\frac{p\,\chi_{14}\dagger}{\varepsilon} + \frac{i\,p\,\chi_3\dagger}{2\,\varepsilon} - \frac{i\,p\,\chi_9\dagger}{2\,\varepsilon},\ \sigma\dagger_{023} \to -\frac{p\,\chi_{13}\dagger}{\varepsilon} + \frac{i\,p\,\chi_2\dagger}{2\,\varepsilon} - \frac{i\,p\,\chi_5\dagger}{2\,\varepsilon},\ \sigma\dagger_{101} \to \chi_{30}\dagger,$$

$$\sigma\dagger_{102} \to \chi_{29}\dagger,\ \sigma\dagger_{103} \to \chi_{28}\dagger,\ \sigma\dagger_{112} \to \chi_{27}\dagger,\ \sigma\dagger_{113} \to \chi_{26}\dagger,\ \sigma\dagger_{123} \to \chi_{25}\dagger,$$

$$\sigma\dagger_{201} \to \chi_{24}\dagger,\ \sigma\dagger_{202} \to \chi_{23}\dagger,\ \sigma\dagger_{203} \to \chi_{22}\dagger,\ \sigma\dagger_{212} \to \chi_{21}\dagger,\ \sigma\dagger_{213} \to \chi_{20}\dagger,$$

$$\sigma\dagger_{223} \to \chi_{19}\dagger,\ \sigma\dagger_{301} \to \chi_{18}\dagger,\ \sigma\dagger_{302} \to \chi_{17}\dagger,\ \sigma\dagger_{303} \to \chi_{16}\dagger,\ \sigma\dagger_{312} \to \chi_{15}\dagger,$$

$$\sigma\dagger_{313} \to \chi_{14}\dagger,\ \sigma\dagger_{323} \to \chi_{13}\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{00} \to -p\,\chi_{11}\dagger - p\,\chi_1\dagger - \frac{2\,p^2\,\chi_4\dagger}{\varepsilon} - p\,\chi_6\dagger,$$

$$\tau\,(\Delta{+}\mathcal{K})\dagger_{01} \to -\frac{p^2\,\chi_3\dagger}{\varepsilon},\ \tau\,(\Delta{+}\mathcal{K})\dagger_{02} \to -\frac{p^2\,\chi_2\dagger}{\varepsilon},\ \tau\,(\Delta{+}\mathcal{K})\dagger_{03} \to \frac{p^2\,\chi_{11}\dagger}{\varepsilon} + \frac{p^3\,\chi_4\dagger}{\varepsilon^2} + \frac{p^2\,\chi_6\dagger}{\varepsilon},$$

$$\tau\,(\Delta{+}\mathcal{K})\dagger_{10} \to p\,\chi_{12}\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{11} \to p\,\chi_{11}\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{12} \to p\,\chi_{10}\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{13} \to p\,\chi_9\dagger,$$

$$\tau\,(\Delta{+}\mathcal{K})\dagger_{20} \to p\,\chi_8\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{21} \to p\,\chi_7\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{22} \to p\,\chi_6\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{23} \to p\,\chi_5\dagger,$$

$$\tau\,(\Delta{+}\mathcal{K})\dagger_{30} \to p\,\chi_4\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{31} \to p\,\chi_3\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{32} \to p\,\chi_2\dagger,\ \tau\,(\Delta{+}\mathcal{K})\dagger_{33} \to p\,\chi_1\dagger\Big\}$$

Square masses:

{{}, {}, {}}

Massive pole residues:

{{}, {}, {}}

SaturatedPropagatorArray

$$\left\{\left\{\frac{{}^{0^-}\!\cdot\sigma^{\parallel}\,{}^{0^-}\!\cdot\sigma^{\parallel}\dagger}{6\,t_{\cdot_1}},\ -\frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\dagger\,{}^{0^+}\!\cdot\tau^{\parallel}}{6\,k\,t_{\cdot_1}},\ \frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\,{}^{0^+}\!\cdot\tau^{\parallel}\dagger}{6\,k\,t_{\cdot_1}},\ \frac{{}^{0^+}\!\cdot\tau^{\parallel}\,{}^{0^+}\!\cdot\tau^{\parallel}\dagger}{24\,k^2\,t_{\cdot_1}},\ -\frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\dagger\,{}^{0^+}\!\cdot\tau^{\perp}}{2\,k\,t_{\cdot_1}},\ \frac{{}^{0^+}\!\cdot\tau^{\parallel}\dagger\,{}^{0^+}\!\cdot\tau^{\perp}}{8\,k^2\,t_{\cdot_1}},\ \frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\,{}^{0^+}\!\cdot\tau^{\perp}\dagger}{2\,k\,t_{\cdot_1}},\ \frac{{}^{0^+}\!\cdot\tau^{\parallel}\,{}^{0^+}\!\cdot\tau^{\perp}\dagger}{8\,k^2\,t_{\cdot_1}},\right.\right.$$

$$\left.\frac{3\,{}^{0^+}\!\cdot\tau^{\perp}\,{}^{0^+}\!\cdot\tau^{\perp}\dagger}{8\,k^2\,t_{\cdot_1}}\right\},\left\{\frac{2\,{}^{1^-}\!\cdot\sigma^{\parallel}\dagger^{q}\,{}^{1^-}\!\cdot\sigma^{\perp}{}_{q}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ \frac{2\,{}^{1^-}\!\cdot\sigma^{\parallel}{}^{q}\,{}^{1^-}\!\cdot\sigma^{\perp}\dagger_{q}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ \frac{2\,{}^{1^-}\!\cdot\sigma^{\perp}{}^{q}\,{}^{1^-}\!\cdot\sigma^{\perp}\dagger_{q}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}},\ -\frac{2\,{}^{1^+}\!\cdot\sigma^{\parallel}\dagger^{qb}\,{}^{1^+}\!\cdot\sigma^{\perp}{}_{qb}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\right.$$

$$-\frac{2\,{}^{1^+}\!\cdot\sigma^{\parallel}{}^{qb}\,{}^{1^+}\!\cdot\sigma^{\perp}\dagger_{qb}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\ \frac{{}^{1^+}\!\cdot\sigma^{\perp}{}^{qb}\,{}^{1^+}\!\cdot\sigma^{\perp}\dagger_{qb}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ -\frac{2\,i\,k\,{}^{1^+}\!\cdot\sigma^{\parallel}\dagger^{qb}\,{}^{1^+}\!\cdot\tau^{\parallel}{}_{qb}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\ \frac{i\,k\,{}^{1^+}\!\cdot\sigma^{\perp}\dagger^{qb}\,{}^{1^+}\!\cdot\tau^{\parallel}{}_{qb}}{\left(1+k^2\right)^2\,t_{\cdot_1}},$$

$$\frac{2\,i\,k\,{}^{1^+}\!\cdot\sigma^{\parallel}{}^{qb}\,{}^{1^+}\!\cdot\tau^{\parallel}\dagger_{qb}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\ -\frac{i\,k\,{}^{1^+}\!\cdot\sigma^{\perp}{}^{qb}\,{}^{1^+}\!\cdot\tau^{\parallel}\dagger_{qb}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ \frac{k^2\,{}^{1^+}\!\cdot\tau^{\parallel}{}^{qb}\,{}^{1^+}\!\cdot\tau^{\parallel}\dagger_{qb}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ \frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\parallel}\dagger^{q}\,{}^{1^-}\!\cdot\tau^{\perp}{}_{q}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},$$

$$\frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\perp}\dagger^{q}\,{}^{1^-}\!\cdot\tau^{\perp}{}_{q}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}},\ -\frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\parallel}{}^{q}\,{}^{1^-}\!\cdot\tau^{\perp}\dagger_{q}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ -\frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\perp}{}^{q}\,{}^{1^-}\!\cdot\tau^{\perp}\dagger_{q}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}},\ \frac{2\,k^2\,{}^{1^-}\!\cdot\tau^{\perp}{}^{q}\,{}^{1^-}\!\cdot\tau^{\perp}\dagger_{q}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}}\right\},$$

$$\left.\left\{\frac{32\,{}^{2^-}\!\cdot\sigma^{\parallel}{}^{abc}\,{}^{2^-}\!\cdot\sigma^{\parallel}\dagger_{abc}}{9\,t_{\cdot_1}},\ -\frac{2\,i\,{}^{2^+}\!\cdot\sigma^{\parallel}\dagger^{ab}\,{}^{2^+}\!\cdot\tau^{\parallel}{}_{ab}}{k\,t_{\cdot_1}},\ \frac{2\,i\,{}^{2^+}\!\cdot\sigma^{\parallel}{}^{ab}\,{}^{2^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{k\,t_{\cdot_1}},\ -\frac{{}^{2^+}\!\cdot\tau^{\parallel}{}^{ab}\,{}^{2^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{k^2\,t_{\cdot_1}}\right\}\right\}$$

SaturatedPropagatorArray

$$\left\{\left\{\frac{{}^{0^-}\!\cdot\sigma^{\parallel}\,{}^{0^-}\!\cdot\sigma^{\parallel}\dagger}{6\,t_{\cdot_1}},\ -\frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\dagger\,{}^{0^+}\!\cdot\tau^{\parallel}}{6\,k\,t_{\cdot_1}},\ \frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\,{}^{0^+}\!\cdot\tau^{\parallel}\dagger}{6\,k\,t_{\cdot_1}},\ \frac{{}^{0^+}\!\cdot\tau^{\parallel}\,{}^{0^+}\!\cdot\tau^{\parallel}\dagger}{24\,k^2\,t_{\cdot_1}},\ -\frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\dagger\,{}^{0^+}\!\cdot\tau^{\perp}}{2\,k\,t_{\cdot_1}},\right.\right.$$

$$\left.\frac{{}^{0^+}\!\cdot\tau^{\parallel}\dagger\,{}^{0^+}\!\cdot\tau^{\perp}}{8\,k^2\,t_{\cdot_1}},\ \frac{i\,{}^{0^+}\!\cdot\sigma^{\parallel}\,{}^{0^+}\!\cdot\tau^{\perp}\dagger}{2\,k\,t_{\cdot_1}},\ \frac{{}^{0^+}\!\cdot\tau^{\parallel}\,{}^{0^+}\!\cdot\tau^{\perp}\dagger}{8\,k^2\,t_{\cdot_1}},\ \frac{3\,{}^{0^+}\!\cdot\tau^{\perp}\,{}^{0^+}\!\cdot\tau^{\perp}\dagger}{8\,k^2\,t_{\cdot_1}},\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0\right\},$$

$$\left\{\frac{2\,{}^{1^-}\!\cdot\sigma^{\parallel}\dagger^{a}\,{}^{1^-}\!\cdot\sigma^{\perp}{}_{a}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ \frac{2\,{}^{1^-}\!\cdot\sigma^{\parallel a}\,{}^{1^-}\!\cdot\sigma^{\perp}\dagger_{a}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ \frac{2\,{}^{1^-}\!\cdot\sigma^{\perp a}\,{}^{1^-}\!\cdot\sigma^{\perp}\dagger_{a}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}},\ -\frac{2\,{}^{1^+}\!\cdot\sigma^{\parallel}\dagger^{ab}\,{}^{1^+}\!\cdot\sigma^{\perp}{}_{ab}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\ -\frac{2\,{}^{1^+}\!\cdot\sigma^{\parallel ab}\,{}^{1^+}\!\cdot\sigma^{\perp}\dagger_{ab}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\right.$$

$$\frac{{}^{1^+}\!\cdot\sigma^{\perp ab}\,{}^{1^+}\!\cdot\sigma^{\perp}\dagger_{ab}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ -\frac{2\,i\,k\,{}^{1^+}\!\cdot\sigma^{\parallel}\dagger^{ab}\,{}^{1^+}\!\cdot\tau^{\parallel}{}_{ab}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},\ \frac{i\,k\,{}^{1^+}\!\cdot\sigma^{\perp}\dagger^{ab}\,{}^{1^+}\!\cdot\tau^{\parallel}{}_{ab}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ \frac{2\,i\,k\,{}^{1^+}\!\cdot\sigma^{\parallel ab}\,{}^{1^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{t_{\cdot_1}+k^2\,t_{\cdot_1}},$$

$$-\frac{i\,k\,{}^{1^+}\!\cdot\sigma^{\perp ab}\,{}^{1^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ \frac{k^2\,{}^{1^+}\!\cdot\tau^{\parallel ab}\,{}^{1^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{\left(1+k^2\right)^2\,t_{\cdot_1}},\ \frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\parallel}\dagger^{a}\,{}^{1^-}\!\cdot\tau^{\perp}{}_{a}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ \frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\perp}\dagger^{a}\,{}^{1^-}\!\cdot\tau^{\perp}{}_{a}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}},$$

$$\left.-\frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\parallel a}\,{}^{1^-}\!\cdot\tau^{\perp}\dagger_{a}}{t_{\cdot_1}+2\,k^2\,t_{\cdot_1}},\ -\frac{2\,i\,k\,{}^{1^-}\!\cdot\sigma^{\perp a}\,{}^{1^-}\!\cdot\tau^{\perp}\dagger_{a}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}},\ \frac{2\,k^2\,{}^{1^-}\!\cdot\tau^{\perp a}\,{}^{1^-}\!\cdot\tau^{\perp}\dagger_{a}}{\left(1+2\,k^2\right)^2\,t_{\cdot_1}}\right\},\ \left\{\frac{32\,{}^{2^-}\!\cdot\sigma^{\parallel abc}\,{}^{2^-}\!\cdot\sigma^{\parallel}\dagger_{abc}}{9\,t_{\cdot_1}},\right.$$

$$\left.\left.-\frac{2\,i\,{}^{2^+}\!\cdot\sigma^{\parallel}\dagger^{ab}\,{}^{2^+}\!\cdot\tau^{\parallel}{}_{ab}}{k\,t_{\cdot_1}},\ \frac{2\,i\,{}^{2^+}\!\cdot\sigma^{\parallel ab}\,{}^{2^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{k\,t_{\cdot_1}},\ -\frac{{}^{2^+}\!\cdot\tau^{\parallel ab}\,{}^{2^+}\!\cdot\tau^{\parallel}\dagger_{ab}}{k^2\,t_{\cdot_1}},\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0\right\}\right\}$$

LightconePropagator

$$\left\{\left\{\frac{1}{6\,\mathcal{E}^2\,t_{\cdot_1}\left(\mathcal{E}^2-p^2\right)}\right.\right.$$

$$\left(p^4\,\chi_{10}\,\chi_{10}\dagger-2\,i\,\mathcal{E}^2\,p^2\,\chi_{10}\dagger\,\chi_{15}+2\,i\,p^4\,\chi_{10}\dagger\,\chi_{15}+2\,i\,\mathcal{E}^2\,p^2\,\chi_{10}\,\chi_{15}\dagger-2\,i\,p^4\,\chi_{10}\,\chi_{15}\dagger+4\,\mathcal{E}^4\,\chi_{15}\,\chi_{15}\dagger-\right.$$
$$8\,\mathcal{E}^2\,p^2\,\chi_{15}\,\chi_{15}\dagger+4\,p^4\,\chi_{15}\,\chi_{15}\dagger+2\,i\,\mathcal{E}^2\,p^2\,\chi_{10}\dagger\,\chi_{20}-4\,\mathcal{E}^4\,\chi_{15}\dagger\,\chi_{20}+4\,\mathcal{E}^2\,p^2\,\chi_{15}\dagger\,\chi_{20}-2\,i\,\mathcal{E}^2\,p^2\,\chi_{10}\,\chi_{20}\dagger-$$
$$4\,\mathcal{E}^4\,\chi_{15}\,\chi_{20}\dagger+4\,\mathcal{E}^2\,p^2\,\chi_{15}\,\chi_{20}\dagger+4\,\mathcal{E}^4\,\chi_{20}\,\chi_{20}\dagger-2\,i\,\mathcal{E}\,p^3\,\chi_{10}\dagger\,\chi_{24}+4\,\mathcal{E}^3\,p\,\chi_{15}\dagger\,\chi_{24}-4\,\mathcal{E}\,p^3\,\chi_{15}\dagger\,\chi_{24}-$$
$$4\,\mathcal{E}^3\,p\,\chi_{20}\dagger\,\chi_{24}+2\,i\,\mathcal{E}\,p^3\,\chi_{10}\,\chi_{24}\dagger+4\,\mathcal{E}^3\,p\,\chi_{15}\,\chi_{24}\dagger-4\,\mathcal{E}\,p^3\,\chi_{15}\,\chi_{24}\dagger-4\,\mathcal{E}^3\,p\,\chi_{20}\,\chi_{24}\dagger+$$
$$4\,\mathcal{E}^2\,p^2\,\chi_{24}\,\chi_{24}\dagger-2\,i\,\mathcal{E}^2\,p^2\,\chi_{10}\dagger\,\chi_{25}+4\,\mathcal{E}^4\,\chi_{15}\dagger\,\chi_{25}-4\,\mathcal{E}^2\,p^2\,\chi_{15}\dagger\,\chi_{25}-4\,\mathcal{E}^4\,\chi_{20}\dagger\,\chi_{25}+4\,\mathcal{E}^3\,p\,\chi_{24}\dagger\,\chi_{25}+$$
$$2\,i\,\mathcal{E}^2\,p^2\,\chi_{10}\,\chi_{25}\dagger+4\,\mathcal{E}^4\,\chi_{15}\,\chi_{25}\dagger-4\,\mathcal{E}^2\,p^2\,\chi_{15}\,\chi_{25}\dagger-4\,\mathcal{E}^4\,\chi_{20}\,\chi_{25}\dagger+4\,\mathcal{E}^3\,p\,\chi_{24}\,\chi_{25}\dagger+4\,\mathcal{E}^4\,\chi_{25}\,\chi_{25}\dagger+$$
$$2\,i\,\mathcal{E}\,p^3\,\chi_{10}\dagger\,\chi_{29}-4\,\mathcal{E}^3\,p\,\chi_{15}\dagger\,\chi_{29}+4\,\mathcal{E}\,p^3\,\chi_{15}\dagger\,\chi_{29}+4\,\mathcal{E}^3\,p\,\chi_{20}\dagger\,\chi_{29}-4\,\mathcal{E}^2\,p^2\,\chi_{24}\dagger\,\chi_{29}-$$
$$4\,\mathcal{E}^3\,p\,\chi_{25}\dagger\,\chi_{29}-2\,i\,\mathcal{E}\,p^3\,\chi_{10}\,\chi_{29}\dagger-4\,\mathcal{E}^3\,p\,\chi_{15}\,\chi_{29}\dagger+4\,\mathcal{E}\,p^3\,\chi_{15}\,\chi_{29}\dagger+4\,\mathcal{E}^3\,p\,\chi_{20}\,\chi_{29}\dagger-$$
$$4\,\mathcal{E}^2\,p^2\,\chi_{24}\,\chi_{29}\dagger-4\,\mathcal{E}^3\,p\,\chi_{25}\,\chi_{29}\dagger+4\,\mathcal{E}^2\,p^2\,\chi_{29}\,\chi_{29}\dagger-p^4\,\chi_{10}\dagger\,\chi_{7}-2\,i\,\mathcal{E}^2\,p^2\,\chi_{15}\dagger\,\chi_{7}+2\,i\,p^4\,\chi_{15}\dagger\,\chi_{7}+$$
$$2\,i\,\mathcal{E}^2\,p^2\,\chi_{20}\dagger\,\chi_{7}-2\,i\,\mathcal{E}\,p^3\,\chi_{24}\dagger\,\chi_{7}-2\,i\,\mathcal{E}^2\,p^2\,\chi_{25}\dagger\,\chi_{7}+2\,i\,\mathcal{E}\,p^3\,\chi_{29}\dagger\,\chi_{7}-p^4\,\chi_{10}\,\chi_{7}\dagger+2\,i\,\mathcal{E}^2\,p^2\,\chi_{15}\,\chi_{7}\dagger-$$
$$\left.2\,i\,p^4\,\chi_{15}\,\chi_{7}\dagger-2\,i\,\mathcal{E}^2\,p^2\,\chi_{20}\,\chi_{7}\dagger+2\,i\,\mathcal{E}\,p^3\,\chi_{24}\,\chi_{7}\dagger+2\,i\,\mathcal{E}^2\,p^2\,\chi_{25}\,\chi_{7}\dagger-2\,i\,\mathcal{E}\,p^3\,\chi_{29}\,\chi_{7}\dagger+p^4\,\chi_{7}\,\chi_{7}\dagger\right),$$

$$\frac{1}{12\,\mathcal{E}^4\,t_{\cdot_1}\left(\mathcal{E}^2-p^2\right)}\left(-\mathcal{E}^2\,p^4\,\chi_{1}\,\chi_{11}\dagger-\mathcal{E}^2\,p^4\,\chi_{11}\,\chi_{11}\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{1}\,\chi_{16}\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{1}\,\chi_{16}\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{11}\,\chi_{16}\dagger+\right.$$
$$2\,i\,\mathcal{E}^3\,p^3\,\chi_{11}\,\chi_{16}\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{1}\,\chi_{19}\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{11}\,\chi_{19}\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{1}\,\chi_{23}\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{11}\,\chi_{23}\dagger+$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{1}\,\chi_{26}\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{11}\,\chi_{26}\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{1}\,\chi_{30}\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{11}\,\chi_{30}\dagger-\mathcal{E}\,p^5\,\chi_{11}\dagger\,\chi_{4}-2\,i\,\mathcal{E}^4\,p^2\,\chi_{16}\dagger\,\chi_{4}+$$
$$2\,i\,\mathcal{E}^2\,p^4\,\chi_{16}\dagger\,\chi_{4}+2\,i\,\mathcal{E}^3\,p^3\,\chi_{19}\dagger\,\chi_{4}-2\,i\,\mathcal{E}^4\,p^2\,\chi_{23}\dagger\,\chi_{4}+2\,i\,\mathcal{E}^3\,p^3\,\chi_{26}\dagger\,\chi_{4}-2\,i\,\mathcal{E}^4\,p^2\,\chi_{30}\dagger\,\chi_{4}+$$

$$\mathcal{E}^3 p^3 \chi_1 \chi_4 \dagger - \mathcal{E} p^5 \chi_1 \chi_4 \dagger + \mathcal{E}^3 p^3 \chi_{11} \chi_4 \dagger - \mathcal{E} p^5 \chi_{11} \chi_4 \dagger + \mathcal{E}^2 p^4 \chi_4 \chi_4 \dagger - p^6 \chi_4 \chi_4 \dagger - \mathcal{E}^2 p^4 \chi_{11} \dagger \chi_6 -$$
$$2 i \mathcal{E}^5 p \chi_{16} \dagger \chi_6 + 2 i \mathcal{E}^3 p^3 \chi_{16} \dagger \chi_6 + 2 i \mathcal{E}^4 p^2 \chi_{19} \dagger \chi_6 - 2 i \mathcal{E}^5 p \chi_{23} \dagger \chi_6 + 2 i \mathcal{E}^4 p^2 \chi_{26} \dagger \chi_6 -$$
$$2 i \mathcal{E}^5 p \chi_{30} \dagger \chi_6 + \mathcal{E}^3 p^3 \chi_4 \dagger \chi_6 - \mathcal{E} p^5 \chi_4 \dagger \chi_6 - \mathcal{E}^2 p^4 \chi_1 \chi_6 \dagger - \mathcal{E}^2 p^4 \chi_{11} \chi_6 \dagger - \mathcal{E} p^5 \chi_4 \chi_6 \dagger - \mathcal{E}^2 p^4 \chi_6 \chi_6 \dagger\Big),$$

$$\frac{1}{12 \mathcal{E}^4 t_1 (\mathcal{E}^2 - p^2)}\Big(-\mathcal{E}^2 p^4 \chi_{11} \chi_{11} \dagger + 2 i \mathcal{E}^5 p \chi_{11} \dagger \chi_{16} - 2 i \mathcal{E}^3 p^3 \chi_{11} \dagger \chi_{16} - 2 i \mathcal{E}^4 p^2 \chi_{11} \dagger \chi_{19} -$$
$$\mathcal{E}^2 p^4 \chi_{11} \chi_1 \dagger + 2 i \mathcal{E}^5 p \chi_{16} \chi_1 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{16} \chi_1 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{19} \chi_1 \dagger + 2 i \mathcal{E}^5 p \chi_{11} \dagger \chi_{23} + 2 i \mathcal{E}^5 p \chi_1 \dagger \chi_{23} -$$
$$2 i \mathcal{E}^4 p^2 \chi_{11} \dagger \chi_{26} - 2 i \mathcal{E}^4 p^2 \chi_1 \dagger \chi_{26} + 2 i \mathcal{E}^5 p \chi_{11} \dagger \chi_{30} + 2 i \mathcal{E}^5 p \chi_1 \dagger \chi_{30} + \mathcal{E}^3 p^3 \chi_{11} \dagger \chi_4 - \mathcal{E} p^5 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E}^3 p^3 \chi_1 \dagger \chi_4 - \mathcal{E} p^5 \chi_1 \dagger \chi_4 - \mathcal{E} p^5 \chi_{11} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{16} \chi_4 \dagger - 2 i \mathcal{E}^2 p^4 \chi_{16} \chi_4 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{19} \chi_4 \dagger +$$
$$2 i \mathcal{E}^4 p^2 \chi_{23} \chi_4 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{26} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{30} \chi_4 \dagger + \mathcal{E}^2 p^4 \chi_4 \chi_4 \dagger - p^6 \chi_4 \chi_4 \dagger - \mathcal{E}^2 p^4 \chi_{11} \dagger \chi_6 -$$
$$\mathcal{E}^2 p^4 \chi_1 \dagger \chi_6 - \mathcal{E} p^5 \chi_4 \dagger \chi_6 - \mathcal{E}^2 p^4 \chi_{11} \chi_6 \dagger + 2 i \mathcal{E}^5 p \chi_{16} \chi_6 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{16} \chi_6 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{19} \chi_6 \dagger +$$
$$2 i \mathcal{E}^5 p \chi_{23} \chi_6 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{26} \chi_6 \dagger + 2 i \mathcal{E}^5 p \chi_{30} \chi_6 \dagger + \mathcal{E}^3 p^3 \chi_4 \chi_6 \dagger - \mathcal{E} p^5 \chi_4 \chi_6 \dagger - \mathcal{E}^2 p^4 \chi_6 \chi_6 \dagger\Big),$$

$$\frac{1}{24 \mathcal{E}^2 t_1 (\mathcal{E}^2 - p^2)}\Big(\mathcal{E}^2 p^2 \chi_1 \chi_{11} \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_{11} \dagger + \mathcal{E}^2 p^2 \chi_1 \chi_1 \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_1 \dagger + \mathcal{E} p^3 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E} p^3 \chi_1 \dagger \chi_4 + \mathcal{E} p^3 \chi_1 \chi_4 \dagger + \mathcal{E} p^3 \chi_{11} \chi_4 \dagger + p^4 \chi_4 \chi_4 \dagger + \mathcal{E}^2 p^2 \chi_{11} \dagger \chi_6 + \mathcal{E}^2 p^2 \chi_1 \dagger \chi_6 +$$
$$\mathcal{E} p^3 \chi_4 \dagger \chi_6 + \mathcal{E}^2 p^2 \chi_1 \chi_6 \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_6 \dagger + \mathcal{E} p^3 \chi_4 \chi_6 \dagger + \mathcal{E}^2 p^2 \chi_6 \chi_6 \dagger\Big), \frac{1}{4 \mathcal{E}^4 t_1 (\mathcal{E}^2 - p^2)}$$
$$\Big(-\mathcal{E}^2 p^4 \chi_1 \chi_{11} \dagger - \mathcal{E}^2 p^4 \chi_{11} \chi_{11} \dagger - 2 i \mathcal{E}^5 p \chi_1 \chi_{16} \dagger + 2 i \mathcal{E}^3 p^3 \chi_1 \chi_{16} \dagger - 2 i \mathcal{E}^5 p \chi_{11} \chi_{16} \dagger + 2 i \mathcal{E}^3 p^3 \chi_{11} \chi_{16} \dagger +$$
$$2 i \mathcal{E}^4 p^2 \chi_1 \chi_{19} \dagger + 2 i \mathcal{E}^4 p^2 \chi_{11} \chi_{19} \dagger - 2 i \mathcal{E}^5 p \chi_1 \chi_{23} \dagger - 2 i \mathcal{E}^5 p \chi_{11} \chi_{23} \dagger + 2 i \mathcal{E}^4 p^2 \chi_1 \chi_{26} \dagger +$$
$$2 i \mathcal{E}^4 p^2 \chi_{11} \chi_{26} \dagger - 2 i \mathcal{E}^5 p \chi_1 \chi_{30} \dagger - 2 i \mathcal{E}^5 p \chi_{11} \chi_{30} \dagger - \mathcal{E} p^5 \chi_{11} \dagger \chi_4 - 2 i \mathcal{E}^4 p^2 \chi_{16} \dagger \chi_4 +$$
$$2 i \mathcal{E}^2 p^4 \chi_{16} \dagger \chi_4 + 2 i \mathcal{E}^3 p^3 \chi_{19} \dagger \chi_4 - 2 i \mathcal{E}^4 p^2 \chi_{23} \dagger \chi_4 + 2 i \mathcal{E}^3 p^3 \chi_{26} \dagger \chi_4 - 2 i \mathcal{E}^4 p^2 \chi_{30} \dagger \chi_4 +$$
$$\mathcal{E}^3 p^3 \chi_1 \chi_4 \dagger - \mathcal{E} p^5 \chi_1 \chi_4 \dagger + \mathcal{E}^3 p^3 \chi_{11} \chi_4 \dagger - \mathcal{E} p^5 \chi_{11} \chi_4 \dagger + \mathcal{E}^2 p^4 \chi_4 \chi_4 \dagger - p^6 \chi_4 \chi_4 \dagger - \mathcal{E}^2 p^4 \chi_{11} \dagger \chi_6 -$$
$$2 i \mathcal{E}^5 p \chi_{16} \dagger \chi_6 + 2 i \mathcal{E}^3 p^3 \chi_{16} \dagger \chi_6 + 2 i \mathcal{E}^4 p^2 \chi_{19} \dagger \chi_6 - 2 i \mathcal{E}^5 p \chi_{23} \dagger \chi_6 + 2 i \mathcal{E}^4 p^2 \chi_{26} \dagger \chi_6 -$$
$$2 i \mathcal{E}^5 p \chi_{30} \dagger \chi_6 + \mathcal{E}^3 p^3 \chi_4 \dagger \chi_6 - \mathcal{E} p^5 \chi_4 \dagger \chi_6 - \mathcal{E}^2 p^4 \chi_1 \chi_6 \dagger - \mathcal{E}^2 p^4 \chi_{11} \chi_6 \dagger - \mathcal{E} p^5 \chi_4 \chi_6 \dagger - \mathcal{E}^2 p^4 \chi_6 \chi_6 \dagger\Big),$$

$$\frac{1}{8 \mathcal{E}^2 t_1 (\mathcal{E}^2 - p^2)}\Big(\mathcal{E}^2 p^2 \chi_1 \chi_{11} \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_{11} \dagger + \mathcal{E}^2 p^2 \chi_1 \chi_1 \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_1 \dagger + \mathcal{E} p^3 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E} p^3 \chi_1 \dagger \chi_4 + \mathcal{E} p^3 \chi_1 \chi_4 \dagger + \mathcal{E} p^3 \chi_{11} \chi_4 \dagger + p^4 \chi_4 \chi_4 \dagger + \mathcal{E}^2 p^2 \chi_{11} \dagger \chi_6 + \mathcal{E}^2 p^2 \chi_1 \dagger \chi_6 +$$
$$\mathcal{E} p^3 \chi_4 \dagger \chi_6 + \mathcal{E}^2 p^2 \chi_1 \chi_6 \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_6 \dagger + \mathcal{E} p^3 \chi_4 \chi_6 \dagger + \mathcal{E}^2 p^2 \chi_6 \chi_6 \dagger\Big), \frac{1}{4 \mathcal{E}^4 t_1 (\mathcal{E}^2 - p^2)}$$
$$\Big(-\mathcal{E}^2 p^4 \chi_{11} \chi_{11} \dagger + 2 i \mathcal{E}^5 p \chi_{11} \dagger \chi_{16} - 2 i \mathcal{E}^3 p^3 \chi_{11} \dagger \chi_{16} - 2 i \mathcal{E}^4 p^2 \chi_{11} \dagger \chi_{19} - \mathcal{E}^2 p^4 \chi_{11} \chi_1 \dagger +$$
$$2 i \mathcal{E}^5 p \chi_{16} \chi_1 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{16} \chi_1 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{19} \chi_1 \dagger + 2 i \mathcal{E}^5 p \chi_{11} \dagger \chi_{23} + 2 i \mathcal{E}^5 p \chi_1 \dagger \chi_{23} -$$
$$2 i \mathcal{E}^4 p^2 \chi_{11} \dagger \chi_{26} - 2 i \mathcal{E}^4 p^2 \chi_1 \dagger \chi_{26} + 2 i \mathcal{E}^5 p \chi_{11} \dagger \chi_{30} + 2 i \mathcal{E}^5 p \chi_1 \dagger \chi_{30} + \mathcal{E}^3 p^3 \chi_{11} \dagger \chi_4 - \mathcal{E} p^5 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E}^3 p^3 \chi_1 \dagger \chi_4 - \mathcal{E} p^5 \chi_1 \dagger \chi_4 - \mathcal{E} p^5 \chi_{11} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{16} \chi_4 \dagger - 2 i \mathcal{E}^2 p^4 \chi_{16} \chi_4 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{19} \chi_4 \dagger +$$
$$2 i \mathcal{E}^4 p^2 \chi_{23} \chi_4 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{26} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{30} \chi_4 \dagger + \mathcal{E}^2 p^4 \chi_4 \chi_4 \dagger - p^6 \chi_4 \chi_4 \dagger - \mathcal{E}^2 p^4 \chi_{11} \dagger \chi_6 -$$
$$\mathcal{E}^2 p^4 \chi_1 \dagger \chi_6 - \mathcal{E} p^5 \chi_4 \dagger \chi_6 - \mathcal{E}^2 p^4 \chi_{11} \chi_6 \dagger + 2 i \mathcal{E}^5 p \chi_{16} \chi_6 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{16} \chi_6 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{19} \chi_6 \dagger +$$
$$2 i \mathcal{E}^5 p \chi_{23} \chi_6 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{26} \chi_6 \dagger + 2 i \mathcal{E}^5 p \chi_{30} \chi_6 \dagger + \mathcal{E}^3 p^3 \chi_4 \chi_6 \dagger - \mathcal{E} p^5 \chi_4 \chi_6 \dagger - \mathcal{E}^2 p^4 \chi_6 \chi_6 \dagger\Big),$$

$$\frac{1}{8 \mathcal{E}^2 t_1 (\mathcal{E}^2 - p^2)}\Big(\mathcal{E}^2 p^2 \chi_1 \chi_{11} \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_{11} \dagger + \mathcal{E}^2 p^2 \chi_1 \chi_1 \dagger + \mathcal{E}^2 p^2 \chi_{11} \chi_1 \dagger + \mathcal{E} p^3 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E} p^3 \chi_1 \dagger \chi_4 + \mathcal{E} p^3 \chi_1 \chi_4 \dagger + \mathcal{E} p^3 \chi_{11} \chi_4 \dagger + p^4 \chi_4 \chi_4 \dagger + \mathcal{E}^2 p^2 \chi_{11} \dagger \chi_6 + \mathcal{E}^2 p^2 \chi_1 \dagger \chi_6 +$$

$$\mathcal{E}\,p^3\,\chi_4\,\dagger\,\chi_6+\mathcal{E}^2\,p^2\,\chi_1\,\chi_6\,\dagger+\mathcal{E}^2\,p^2\,\chi_{11}\,\chi_6\,\dagger+\mathcal{E}\,p^3\,\chi_4\,\chi_6\,\dagger+\mathcal{E}^2\,p^2\,\chi_6\,\chi_6\,\dagger\Big),\ \frac{1}{8\,\mathcal{E}^2\,t_{\cdot 1}\,(\mathcal{E}^2-p^2)}$$

$$3\Big(\mathcal{E}^2\,p^2\,\chi_1\,\chi_{11}\,\dagger+\mathcal{E}^2\,p^2\,\chi_{11}\,\chi_{11}\,\dagger+\mathcal{E}^2\,p^2\,\chi_1\,\chi_1\,\dagger+\mathcal{E}^2\,p^2\,\chi_{11}\,\chi_1\,\dagger+\mathcal{E}\,p^3\,\chi_{11}\,\dagger\,\chi_4+\mathcal{E}\,p^3\,\chi_1\,\dagger\,\chi_4+$$
$$\mathcal{E}\,p^3\,\chi_1\,\chi_4\,\dagger+\mathcal{E}\,p^3\,\chi_{11}\,\chi_4\,\dagger+p^4\,\chi_4\,\chi_4\,\dagger+\mathcal{E}^2\,p^2\,\chi_{11}\,\dagger\,\chi_6+\mathcal{E}^2\,p^2\,\chi_1\,\dagger\,\chi_6+\mathcal{E}\,p^3\,\chi_4\,\dagger\,\chi_6+$$
$$\mathcal{E}^2\,p^2\,\chi_1\,\chi_6\,\dagger+\mathcal{E}^2\,p^2\,\chi_{11}\,\chi_6\,\dagger+\mathcal{E}\,p^3\,\chi_4\,\chi_6\,\dagger+\mathcal{E}^2\,p^2\,\chi_6\,\chi_6\,\dagger\Big),\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0\Big\},$$

$$\Big\{\Big(-\mathcal{E}^2\,p^4\,\chi_{12}\,\chi_{12}\,\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{12}\,\chi_{14}\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{12}\,\chi_{14}\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{12}\,\chi_{18}\,\dagger-2\,i\,\mathcal{E}^2\,p^4\,\chi_{12}\,\chi_{18}\,\dagger-$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{11}\,\chi_{19}\,\dagger+2\,i\,\mathcal{E}^2\,p^4\,\chi_{11}\,\chi_{19}\,\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{12}\,\chi_{21}\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{12}\,\chi_{21}\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{11}\,\chi_{23}\,\dagger-$$
$$2\,i\,\mathcal{E}\,p^5\,\chi_{11}\,\chi_{23}\,\dagger-2\,i\,\mathcal{E}^4\,p^2\,\chi_{11}\,\chi_{26}\,\dagger+2\,i\,\mathcal{E}^2\,p^4\,\chi_{11}\,\chi_{26}\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{11}\,\chi_{30}\,\dagger-2\,i\,\mathcal{E}\,p^5\,\chi_{11}\,\chi_{30}\,\dagger+$$
$$\mathcal{E}^3\,p^3\,\chi_{12}\,\chi_3\,\dagger-\mathcal{E}\,p^5\,\chi_{12}\,\chi_3\,\dagger+2\,i\,\mathcal{E}^5\,p\,\chi_{19}\,\dagger\,\chi_4-4\,i\,\mathcal{E}^3\,p^3\,\chi_{19}\,\dagger\,\chi_4+2\,i\,\mathcal{E}\,p^5\,\chi_{19}\,\dagger\,\chi_4-2\,i\,\mathcal{E}^4\,p^2\,\chi_{23}\,\dagger\,\chi_4+$$
$$4\,i\,\mathcal{E}^2\,p^4\,\chi_{23}\,\dagger\,\chi_4-2\,i\,p^6\,\chi_{23}\,\dagger\,\chi_4+2\,i\,\mathcal{E}^5\,p\,\chi_{26}\,\dagger\,\chi_4-4\,i\,\mathcal{E}^3\,p^3\,\chi_{26}\,\dagger\,\chi_4+2\,i\,\mathcal{E}\,p^5\,\chi_{26}\,\dagger\,\chi_4-2\,i\,\mathcal{E}^4\,p^2\,\chi_{30}\,\dagger\,\chi_4+$$
$$4\,i\,\mathcal{E}^2\,p^4\,\chi_{30}\,\dagger\,\chi_4-2\,i\,p^6\,\chi_{30}\,\dagger\,\chi_4-2\,i\,\mathcal{E}^4\,p^2\,\chi_{13}\,\dagger\,\chi_5+2\,i\,\mathcal{E}^2\,p^4\,\chi_{13}\,\dagger\,\chi_5+2\,i\,\mathcal{E}^3\,p^3\,\chi_{17}\,\dagger\,\chi_5-2\,i\,\mathcal{E}\,p^5\,\chi_{17}\,\dagger\,\chi_5+$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{27}\,\dagger\,\chi_5-2\,i\,\mathcal{E}^2\,p^4\,\chi_{27}\,\dagger\,\chi_5+\mathcal{E}^2\,p^4\,\chi_2\,\dagger\,\chi_5-p^6\,\chi_2\,\dagger\,\chi_5-\mathcal{E}^2\,p^4\,\chi_5\,\chi_5\,\dagger-2\,i\,\mathcal{E}^4\,p^2\,\chi_{19}\,\dagger\,\chi_6+$$
$$2\,i\,\mathcal{E}^2\,p^4\,\chi_{19}\,\dagger\,\chi_6+2\,i\,\mathcal{E}^3\,p^3\,\chi_{23}\,\dagger\,\chi_6-2\,i\,\mathcal{E}\,p^5\,\chi_{23}\,\dagger\,\chi_6-2\,i\,\mathcal{E}^4\,p^2\,\chi_{26}\,\dagger\,\chi_6+2\,i\,\mathcal{E}^2\,p^4\,\chi_{26}\,\dagger\,\chi_6+2\,i\,\mathcal{E}^3\,p^3\,\chi_{30}\,\dagger\,\chi_6-$$
$$2\,i\,\mathcal{E}\,p^5\,\chi_{30}\,\dagger\,\chi_6-2\,i\,\mathcal{E}^5\,p\,\chi_{13}\,\dagger\,\chi_8+2\,i\,\mathcal{E}^3\,p^3\,\chi_{13}\,\dagger\,\chi_8+2\,i\,\mathcal{E}^4\,p^2\,\chi_{17}\,\dagger\,\chi_8-2\,i\,\mathcal{E}^2\,p^4\,\chi_{17}\,\dagger\,\chi_8+2\,i\,\mathcal{E}^5\,p\,\chi_{27}\,\dagger\,\chi_8-$$
$$2\,i\,\mathcal{E}^3\,p^3\,\chi_{27}\,\dagger\,\chi_8+\mathcal{E}^3\,p^3\,\chi_2\,\dagger\,\chi_8-\mathcal{E}\,p^5\,\chi_2\,\dagger\,\chi_8-\mathcal{E}^3\,p^3\,\chi_5\,\dagger\,\chi_8-\mathcal{E}\,p^5\,\chi_5\,\chi_8\,\dagger-\mathcal{E}^2\,p^4\,\chi_8\,\chi_8\,\dagger-\mathcal{E}\,p^5\,\chi_{12}\,\dagger\,\chi_9-$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{14}\,\dagger\,\chi_9+2\,i\,\mathcal{E}^2\,p^4\,\chi_{14}\,\dagger\,\chi_9+2\,i\,\mathcal{E}^3\,p^3\,\chi_{18}\,\dagger\,\chi_9-2\,i\,\mathcal{E}\,p^5\,\chi_{18}\,\dagger\,\chi_9-2\,i\,\mathcal{E}^4\,p^2\,\chi_{21}\,\dagger\,\chi_9+2\,i\,\mathcal{E}^2\,p^4\,\chi_{21}\,\dagger\,\chi_9+$$
$$\mathcal{E}^2\,p^4\,\chi_3\,\dagger\,\chi_9-p^6\,\chi_3\,\dagger\,\chi_9-\mathcal{E}^3\,p^3\,\chi_{12}\,\chi_9\,\dagger-\mathcal{E}^2\,p^4\,\chi_9\,\chi_9\,\dagger\Big)\Big/\Big(2\,\mathcal{E}^2\,t_{\cdot 1}\,\big(1+2\,\mathcal{E}^2-2\,p^2\big)\,(\mathcal{E}^2-p^2)^2\Big),$$

$$\Big(-\mathcal{E}^2\,p^4\,\chi_{12}\,\chi_{12}\,\dagger+2\,i\,\mathcal{E}^5\,p\,\chi_{12}\,\dagger\,\chi_{14}-2\,i\,\mathcal{E}^3\,p^3\,\chi_{12}\,\dagger\,\chi_{14}-2\,i\,\mathcal{E}^4\,p^2\,\chi_{12}\,\dagger\,\chi_{18}+2\,i\,\mathcal{E}^2\,p^4\,\chi_{12}\,\dagger\,\chi_{18}+$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{11}\,\dagger\,\chi_{19}-2\,i\,\mathcal{E}^2\,p^4\,\chi_{11}\,\dagger\,\chi_{19}+2\,i\,\mathcal{E}^5\,p\,\chi_{12}\,\dagger\,\chi_{21}-2\,i\,\mathcal{E}^3\,p^3\,\chi_{12}\,\dagger\,\chi_{21}-2\,i\,\mathcal{E}^3\,p^3\,\chi_{11}\,\dagger\,\chi_{23}+$$
$$2\,i\,\mathcal{E}\,p^5\,\chi_{11}\,\dagger\,\chi_{23}+2\,i\,\mathcal{E}^4\,p^2\,\chi_{11}\,\dagger\,\chi_{26}-2\,i\,\mathcal{E}^2\,p^4\,\chi_{11}\,\dagger\,\chi_{26}+\mathcal{E}^3\,p^3\,\chi_{12}\,\dagger\,\chi_3-\mathcal{E}\,p^5\,\chi_{12}\,\dagger\,\chi_3-2\,i\,\mathcal{E}^3\,p^3\,\chi_{11}\,\dagger\,\chi_{30}+$$
$$2\,i\,\mathcal{E}\,p^5\,\chi_{11}\,\dagger\,\chi_{30}-2\,i\,\mathcal{E}^5\,p\,\chi_{19}\,\chi_4\,\dagger+4\,i\,\mathcal{E}^3\,p^3\,\chi_{19}\,\chi_4\,\dagger-2\,i\,\mathcal{E}\,p^5\,\chi_{19}\,\chi_4\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{23}\,\chi_4\,\dagger-4\,i\,\mathcal{E}^2\,p^4\,\chi_{23}\,\chi_4\,\dagger+$$
$$2\,i\,p^6\,\chi_{23}\,\chi_4\,\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{26}\,\chi_4\,\dagger+4\,i\,\mathcal{E}^3\,p^3\,\chi_{26}\,\chi_4\,\dagger-2\,i\,\mathcal{E}\,p^5\,\chi_{26}\,\chi_4\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{30}\,\chi_4\,\dagger-4\,i\,\mathcal{E}^2\,p^4\,\chi_{30}\,\chi_4\,\dagger+$$
$$2\,i\,p^6\,\chi_{30}\,\chi_4\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{13}\,\chi_5\,\dagger-2\,i\,\mathcal{E}^2\,p^4\,\chi_{13}\,\chi_5\,\dagger-2\,i\,\mathcal{E}^3\,p^3\,\chi_{17}\,\chi_5\,\dagger+2\,i\,\mathcal{E}\,p^5\,\chi_{17}\,\chi_5\,\dagger+\mathcal{E}^2\,p^4\,\chi_2\,\chi_5\,\dagger-$$
$$p^6\,\chi_2\,\chi_5\,\dagger-2\,i\,\mathcal{E}^4\,p^2\,\chi_{27}\,\chi_5\,\dagger+2\,i\,\mathcal{E}^2\,p^4\,\chi_{27}\,\chi_5\,\dagger-\mathcal{E}^2\,p^4\,\chi_5\,\chi_5\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{19}\,\chi_6\,\dagger-2\,i\,\mathcal{E}^2\,p^4\,\chi_{19}\,\chi_6\,\dagger-$$
$$2\,i\,\mathcal{E}^3\,p^3\,\chi_{23}\,\chi_6\,\dagger+2\,i\,\mathcal{E}\,p^5\,\chi_{23}\,\chi_6\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{26}\,\chi_6\,\dagger-2\,i\,\mathcal{E}^2\,p^4\,\chi_{26}\,\chi_6\,\dagger-2\,i\,\mathcal{E}^3\,p^3\,\chi_{30}\,\chi_6\,\dagger+2\,i\,\mathcal{E}\,p^5\,\chi_{30}\,\chi_6\,\dagger-$$
$$\mathcal{E}\,p^5\,\chi_5\,\dagger\,\chi_8+2\,i\,\mathcal{E}^5\,p\,\chi_{13}\,\chi_8\,\dagger-2\,i\,\mathcal{E}^3\,p^3\,\chi_{13}\,\chi_8\,\dagger-2\,i\,\mathcal{E}^4\,p^2\,\chi_{17}\,\chi_8\,\dagger+2\,i\,\mathcal{E}^2\,p^4\,\chi_{17}\,\chi_8\,\dagger+\mathcal{E}^3\,p^3\,\chi_2\,\chi_8\,\dagger-$$
$$\mathcal{E}\,p^5\,\chi_2\,\chi_8\,\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_{27}\,\chi_8\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{27}\,\chi_8\,\dagger-\mathcal{E}^3\,p^3\,\chi_5\,\chi_8\,\dagger-\mathcal{E}^2\,p^4\,\chi_8\,\chi_8\,\dagger-\mathcal{E}^3\,p^3\,\chi_{12}\,\dagger\,\chi_9-$$
$$\mathcal{E}\,p^5\,\chi_{12}\,\chi_9\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{14}\,\chi_9\,\dagger-2\,i\,\mathcal{E}^2\,p^4\,\chi_{14}\,\chi_9\,\dagger-2\,i\,\mathcal{E}^3\,p^3\,\chi_{18}\,\chi_9\,\dagger+2\,i\,\mathcal{E}\,p^5\,\chi_{18}\,\chi_9\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{21}\,\chi_9\,\dagger-$$
$$2\,i\,\mathcal{E}^2\,p^4\,\chi_{21}\,\chi_9\,\dagger+\mathcal{E}^2\,p^4\,\chi_3\,\chi_9\,\dagger-p^6\,\chi_3\,\chi_9\,\dagger-\mathcal{E}^2\,p^4\,\chi_9\,\chi_9\,\dagger\Big)\Big/\Big(2\,\mathcal{E}^2\,t_{\cdot 1}\,\big(1+2\,\mathcal{E}^2-2\,p^2\big)\,(\mathcal{E}^2-p^2)^2\Big),$$

$$\Big(-\mathcal{E}^4\,p^4\,\chi_{11}\,\chi_{11}\,\dagger+\mathcal{E}^2\,p^6\,\chi_{11}\,\chi_{11}\,\dagger-\mathcal{E}^6\,p^2\,\chi_{12}\,\chi_{12}\,\dagger+\mathcal{E}^5\,p^3\,\chi_{11}\,\dagger\,\chi_4-2\,\mathcal{E}^3\,p^5\,\chi_{11}\,\dagger\,\chi_4+\mathcal{E}\,p^7\,\chi_{11}\,\dagger\,\chi_4+\mathcal{E}^5\,p^3\,\chi_{11}\,\chi_4\,\dagger-$$
$$2\,\mathcal{E}^3\,p^5\,\chi_{11}\,\chi_4\,\dagger+\mathcal{E}\,p^7\,\chi_{11}\,\chi_4\,\dagger-\mathcal{E}^6\,p^2\,\chi_4\,\chi_4\,\dagger+3\,\mathcal{E}^4\,p^4\,\chi_4\,\chi_4\,\dagger-3\,\mathcal{E}^2\,p^6\,\chi_4\,\chi_4\,\dagger+p^8\,\chi_4\,\chi_4\,\dagger-\mathcal{E}^4\,p^4\,\chi_5\,\chi_5\,\dagger-$$
$$\mathcal{E}^4\,p^4\,\chi_{11}\,\dagger\,\chi_6+\mathcal{E}^2\,p^6\,\chi_{11}\,\dagger\,\chi_6+\mathcal{E}^5\,p^3\,\chi_4\,\dagger\,\chi_6-2\,\mathcal{E}^3\,p^5\,\chi_4\,\dagger\,\chi_6+\mathcal{E}\,p^7\,\chi_4\,\dagger\,\chi_6-\mathcal{E}^4\,p^4\,\chi_{11}\,\chi_6\,\dagger+\mathcal{E}^2\,p^6\,\chi_{11}\,\chi_6\,\dagger+$$
$$\mathcal{E}^5\,p^3\,\chi_4\,\chi_6\,\dagger-2\,\mathcal{E}^3\,p^5\,\chi_4\,\chi_6\,\dagger+\mathcal{E}\,p^7\,\chi_4\,\chi_6\,\dagger-\mathcal{E}^4\,p^4\,\chi_6\,\chi_6\,\dagger+\mathcal{E}^2\,p^6\,\chi_6\,\chi_6\,\dagger-\mathcal{E}^5\,p^3\,\chi_5\,\dagger\,\chi_8-\mathcal{E}^5\,p^3\,\chi_5\,\chi_8\,\dagger-$$
$$\mathcal{E}^6\,p^2\,\chi_8\,\chi_8\,\dagger-\mathcal{E}^5\,p^3\,\chi_{12}\,\dagger\,\chi_9-\mathcal{E}^5\,p^3\,\chi_{12}\,\chi_9\,\dagger-\mathcal{E}^4\,p^4\,\chi_9\,\chi_9\,\dagger\Big)\Big/\Big(2\,\mathcal{E}^4\,t_{\cdot 1}\,\big(1+2\,\mathcal{E}^2-2\,p^2\big)^2\,(\mathcal{E}^2-p^2)^2\Big),$$

$$\Big(\mathcal{E}^2\,p^4\,\chi_{12}\,\chi_{12}\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{12}\,\chi_{14}\,\dagger-2\,i\,\mathcal{E}\,p^5\,\chi_{12}\,\chi_{14}\,\dagger-2\,i\,\mathcal{E}^4\,p^2\,\chi_{12}\,\chi_{18}\,\dagger+2\,i\,\mathcal{E}^2\,p^4\,\chi_{12}\,\chi_{18}\,\dagger-$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{13}\,\dagger\,\chi_2+4\,i\,\mathcal{E}^2\,p^4\,\chi_{13}\,\dagger\,\chi_2-2\,i\,p^6\,\chi_{13}\,\dagger\,\chi_2+2\,i\,\mathcal{E}^5\,p\,\chi_{17}\,\dagger\,\chi_2-4\,i\,\mathcal{E}^3\,p^3\,\chi_{17}\,\dagger\,\chi_2+2\,i\,\mathcal{E}\,p^5\,\chi_{17}\,\dagger\,\chi_2+$$
$$2\,i\,\mathcal{E}^4\,p^2\,\chi_{10}\,\chi_{20}\,\dagger-2\,i\,\mathcal{E}^2\,p^4\,\chi_{10}\,\chi_{20}\,\dagger-2\,i\,\mathcal{E}^5\,p\,\chi_2\,\chi_{22}\,\dagger+4\,i\,\mathcal{E}^3\,p^3\,\chi_2\,\chi_{22}\,\dagger-2\,i\,\mathcal{E}\,p^5\,\chi_2\,\chi_{22}\,\dagger-$$
$$2\,i\,\mathcal{E}^5\,p\,\chi_{10}\,\chi_{24}\,\dagger+2\,i\,\mathcal{E}^3\,p^3\,\chi_{10}\,\chi_{24}\,\dagger-2\,i\,\mathcal{E}^4\,p^2\,\chi_{10}\,\chi_{25}\,\dagger+2\,i\,\mathcal{E}^2\,p^4\,\chi_{10}\,\chi_{25}\,\dagger+2\,i\,\mathcal{E}^4\,p^2\,\chi_{12}\,\chi_{28}\,\dagger-$$
$$2\,i\,\mathcal{E}^2\,p^4\,\chi_{12}\,\chi_{28}\,\dagger+2\,i\,\mathcal{E}^5\,p\,\chi_{10}\,\chi_{29}\,\dagger-2\,i\,\mathcal{E}^3\,p^3\,\chi_{10}\,\chi_{29}\,\dagger-\mathcal{E}^3\,p^3\,\chi_{12}\,\dagger\,\chi_3+\mathcal{E}\,p^5\,\chi_{12}\,\dagger\,\chi_3-2\,i\,\mathcal{E}^4\,p^2\,\chi_{14}\,\dagger\,\chi_3+$$
$$4\,i\,\mathcal{E}^2\,p^4\,\chi_{14}\,\dagger\,\chi_3-2\,i\,p^6\,\chi_{14}\,\dagger\,\chi_3+2\,i\,\mathcal{E}^5\,p\,\chi_{18}\,\dagger\,\chi_3-4\,i\,\mathcal{E}^3\,p^3\,\chi_{18}\,\dagger\,\chi_3+2\,i\,\mathcal{E}\,p^5\,\chi_{18}\,\dagger\,\chi_3-2\,i\,\mathcal{E}^5\,p\,\chi_{28}\,\dagger\,\chi_3+$$

$$4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{28}\dagger\mathcal{X}_3-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{28}\dagger\mathcal{X}_3+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{13}\dagger\mathcal{X}_5-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{13}\dagger\mathcal{X}_5-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{17}\dagger\mathcal{X}_5+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{17}\dagger\mathcal{X}_5+$$
$$2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{22}\dagger\mathcal{X}_5-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{22}\dagger\mathcal{X}_5-\mathcal{E}^2\,p^4\,\mathcal{X}_2\,\mathcal{X}_5\dagger+p^6\,\mathcal{X}_2\,\mathcal{X}_5\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_5\,\mathcal{X}_5\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{20}\dagger\mathcal{X}_7+$$
$$2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{20}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{24}\dagger\mathcal{X}_7-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{24}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{25}\dagger\mathcal{X}_7-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{25}\dagger\mathcal{X}_7-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{29}\dagger\mathcal{X}_7+$$
$$2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{29}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{13}\dagger\mathcal{X}_8-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{13}\dagger\mathcal{X}_8-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{17}\dagger\mathcal{X}_8+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{17}\dagger\mathcal{X}_8+$$
$$2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{22}\dagger\mathcal{X}_8-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{22}\dagger\mathcal{X}_8+\mathcal{E}\,p^5\,\mathcal{X}_5\dagger\mathcal{X}_8-\mathcal{E}^3\,p^3\,\mathcal{X}_2\,\mathcal{X}_8\dagger+\mathcal{E}\,p^5\,\mathcal{X}_2\,\mathcal{X}_8\dagger+\mathcal{E}^3\,p^3\,\mathcal{X}_5\,\mathcal{X}_8\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_8\,\mathcal{X}_8\dagger+$$
$$\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\dagger\mathcal{X}_9+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{14}\dagger\mathcal{X}_9-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{14}\dagger\mathcal{X}_9-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{18}\dagger\mathcal{X}_9+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{18}\dagger\mathcal{X}_9+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{28}\dagger\mathcal{X}_9-$$
$$2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{28}\dagger\mathcal{X}_9+\mathcal{E}\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_9\dagger-\mathcal{E}^2\,p^4\,\mathcal{X}_3\,\mathcal{X}_9\dagger+p^6\,\mathcal{X}_3\,\mathcal{X}_9\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_9\,\mathcal{X}_9\dagger\Big)\Big/\Big(2\,\mathcal{E}^2\,t_1\,(\mathcal{E}^2-p^2)^2\,(1+\mathcal{E}^2-p^2)\Big),$$

$$\Big(\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{12}\dagger-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\dagger\mathcal{X}_{14}+2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{12}\dagger\mathcal{X}_{14}+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{12}\dagger\mathcal{X}_{18}-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\dagger\mathcal{X}_{18}-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\dagger\mathcal{X}_{20}+$$
$$2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\dagger\mathcal{X}_{20}+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{10}\dagger\mathcal{X}_{24}-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{10}\dagger\mathcal{X}_{24}+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\dagger\mathcal{X}_{25}-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\dagger\mathcal{X}_{25}-$$
$$2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{12}\dagger\mathcal{X}_{28}+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\dagger\mathcal{X}_{28}-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{10}\dagger\mathcal{X}_{29}+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{10}\dagger\mathcal{X}_{29}+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_2\dagger-$$
$$4\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_2\dagger+2\,i\,p^6\,\mathcal{X}_{13}\,\mathcal{X}_2\dagger-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{17}\,\mathcal{X}_2\dagger+4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_2\dagger-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{17}\,\mathcal{X}_2\dagger+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{22}\,\mathcal{X}_2\dagger-$$
$$4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{22}\,\mathcal{X}_2\dagger+2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{22}\,\mathcal{X}_2\dagger-\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_3\dagger+\mathcal{E}\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_3\dagger+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_3\dagger-4\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_3\dagger+$$
$$2\,i\,p^6\,\mathcal{X}_{14}\,\mathcal{X}_3\dagger-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{18}\,\mathcal{X}_3\dagger+4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_3\dagger-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{18}\,\mathcal{X}_3\dagger+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{28}\,\mathcal{X}_3\dagger-4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{28}\,\mathcal{X}_3\dagger+$$
$$2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{28}\,\mathcal{X}_3\dagger-\mathcal{E}^2\,p^4\,\mathcal{X}_2\dagger\mathcal{X}_5+p^6\,\mathcal{X}_2\dagger\mathcal{X}_5-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_5\dagger+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_5\dagger+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{17}\,\mathcal{X}_5\dagger-$$
$$2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_5\dagger-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{22}\,\mathcal{X}_5\dagger+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{22}\,\mathcal{X}_5\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_5\,\mathcal{X}_5\dagger+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{20}\,\mathcal{X}_7\dagger-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{20}\,\mathcal{X}_7\dagger-$$
$$2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{24}\,\mathcal{X}_7\dagger+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{24}\,\mathcal{X}_7\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{25}\,\mathcal{X}_7\dagger+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{25}\,\mathcal{X}_7\dagger+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{29}\,\mathcal{X}_7\dagger-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{29}\,\mathcal{X}_7\dagger-$$
$$\mathcal{E}^3\,p^3\,\mathcal{X}_2\dagger\mathcal{X}_8+\mathcal{E}\,p^5\,\mathcal{X}_2\dagger\mathcal{X}_8+\mathcal{E}^3\,p^3\,\mathcal{X}_5\dagger\mathcal{X}_8-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{13}\,\mathcal{X}_8\dagger+2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{13}\,\mathcal{X}_8\dagger+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{17}\,\mathcal{X}_8\dagger-$$
$$2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{17}\,\mathcal{X}_8\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{22}\,\mathcal{X}_8\dagger+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{22}\,\mathcal{X}_8\dagger+\mathcal{E}\,p^5\,\mathcal{X}_5\,\mathcal{X}_8\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_8\,\mathcal{X}_8\dagger+\mathcal{E}\,p^5\,\mathcal{X}_{12}\dagger\mathcal{X}_9-$$
$$\mathcal{E}^2\,p^4\,\mathcal{X}_3\dagger\mathcal{X}_9+p^6\,\mathcal{X}_3\dagger\mathcal{X}_9+\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_9\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_9\dagger+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_9\dagger+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{18}\,\mathcal{X}_9\dagger-$$
$$2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_9\dagger-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{28}\,\mathcal{X}_9\dagger+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{28}\,\mathcal{X}_9\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_9\,\mathcal{X}_9\dagger\Big)\Big/\Big(2\,\mathcal{E}^2\,t_1\,(\mathcal{E}^2-p^2)^2\,(1+\mathcal{E}^2-p^2)\Big),$$

$$\Big(\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_{10}\dagger-\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_{10}\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{12}\dagger+\mathcal{E}^4\,p^2\,\mathcal{X}_2\,\mathcal{X}_2\dagger-2\,\mathcal{E}^2\,p^4\,\mathcal{X}_2\,\mathcal{X}_2\dagger+p^6\,\mathcal{X}_2\,\mathcal{X}_2\dagger-$$
$$\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\dagger\mathcal{X}_3+\mathcal{E}\,p^5\,\mathcal{X}_{12}\dagger\mathcal{X}_3-\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_3\dagger+\mathcal{E}\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_3\dagger+\mathcal{E}^4\,p^2\,\mathcal{X}_3\,\mathcal{X}_3\dagger-2\,\mathcal{E}^2\,p^4\,\mathcal{X}_3\,\mathcal{X}_3\dagger+$$
$$p^6\,\mathcal{X}_3\,\mathcal{X}_3\dagger-\mathcal{E}^4\,p^2\,\mathcal{X}_2\dagger\mathcal{X}_5+\mathcal{E}^2\,p^4\,\mathcal{X}_2\dagger\mathcal{X}_5-\mathcal{E}^4\,p^2\,\mathcal{X}_2\,\mathcal{X}_5\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_2\,\mathcal{X}_5\dagger+\mathcal{E}^4\,p^2\,\mathcal{X}_5\,\mathcal{X}_5\dagger-\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\dagger\mathcal{X}_7+$$
$$\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\dagger\mathcal{X}_7-\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_7\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_7\dagger+\mathcal{E}^4\,p^2\,\mathcal{X}_7\,\mathcal{X}_7\dagger-\mathcal{E}^2\,p^4\,\mathcal{X}_7\,\mathcal{X}_7\dagger-\mathcal{E}^3\,p^3\,\mathcal{X}_2\dagger\mathcal{X}_8+$$
$$\mathcal{E}\,p^5\,\mathcal{X}_2\dagger\mathcal{X}_8+\mathcal{E}^3\,p^3\,\mathcal{X}_5\dagger\mathcal{X}_8-\mathcal{E}^3\,p^3\,\mathcal{X}_2\,\mathcal{X}_8\dagger+\mathcal{E}\,p^5\,\mathcal{X}_2\,\mathcal{X}_8\dagger+\mathcal{E}^3\,p^3\,\mathcal{X}_5\,\mathcal{X}_8\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_8\,\mathcal{X}_8\dagger+\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\dagger\mathcal{X}_9-$$
$$\mathcal{E}^4\,p^2\,\mathcal{X}_3\dagger\mathcal{X}_9+\mathcal{E}^2\,p^4\,\mathcal{X}_3\dagger\mathcal{X}_9+\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_9\dagger-\mathcal{E}^4\,p^2\,\mathcal{X}_3\,\mathcal{X}_9\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_3\,\mathcal{X}_9\dagger+\mathcal{E}^4\,p^2\,\mathcal{X}_9\,\mathcal{X}_9\dagger\Big)\Big/$$

$$\Big(2\,\mathcal{E}^2\,t_1\,(\mathcal{E}^2-p^2)^2\,(1+\mathcal{E}^2-p^2)^2\Big),\ \frac{1}{2\,\mathcal{E}^2\,t_1\,(\mathcal{E}^2-p^2)\,(1+\mathcal{E}^2-p^2)}$$

$$\Big(\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{12}\dagger+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_{14}\dagger-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_{14}\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{12}\,\mathcal{X}_{18}\dagger+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{18}\dagger-$$
$$2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{13}\dagger\mathcal{X}_2+4\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{13}\dagger\mathcal{X}_2-2\,i\,p^6\,\mathcal{X}_{13}\dagger\mathcal{X}_2+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{17}\dagger\mathcal{X}_2-4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{17}\dagger\mathcal{X}_2+$$
$$2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{17}\dagger\mathcal{X}_2+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_{20}\dagger-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_{20}\dagger-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_2\,\mathcal{X}_{22}\dagger+4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_2\,\mathcal{X}_{22}\dagger-$$
$$2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_2\,\mathcal{X}_{22}\dagger-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{10}\,\mathcal{X}_{24}\dagger+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{10}\,\mathcal{X}_{24}\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_{25}\dagger+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_{25}\dagger+$$
$$2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{12}\,\mathcal{X}_{28}\dagger-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{28}\dagger+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{10}\,\mathcal{X}_{29}\dagger-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{10}\,\mathcal{X}_{29}\dagger-\mathcal{E}^3\,p^3\,\mathcal{X}_{12}\dagger\mathcal{X}_3+$$
$$\mathcal{E}\,p^5\,\mathcal{X}_{12}\dagger\mathcal{X}_3-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{14}\dagger\mathcal{X}_3+4\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{14}\dagger\mathcal{X}_3-2\,i\,p^6\,\mathcal{X}_{14}\dagger\mathcal{X}_3+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{18}\dagger\mathcal{X}_3-4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{18}\dagger\mathcal{X}_3+$$
$$2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{18}\dagger\mathcal{X}_3-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{28}\dagger\mathcal{X}_3+4\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{28}\dagger\mathcal{X}_3-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{28}\dagger\mathcal{X}_3+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{13}\dagger\mathcal{X}_5-$$
$$2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{13}\dagger\mathcal{X}_5-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{17}\dagger\mathcal{X}_5+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{17}\dagger\mathcal{X}_5+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{22}\dagger\mathcal{X}_5-2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{22}\dagger\mathcal{X}_5-$$
$$\mathcal{E}^2\,p^4\,\mathcal{X}_2\,\mathcal{X}_5\dagger+p^6\,\mathcal{X}_2\,\mathcal{X}_5\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_5\,\mathcal{X}_5\dagger-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{20}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{20}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{24}\dagger\mathcal{X}_7-$$
$$2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{24}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{25}\dagger\mathcal{X}_7-2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{25}\dagger\mathcal{X}_7-2\,i\,\mathcal{E}^5\,p\,\mathcal{X}_{29}\dagger\mathcal{X}_7+2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{29}\dagger\mathcal{X}_7+$$
$$2\,i\,\mathcal{E}^3\,p^3\,\mathcal{X}_{13}\dagger\mathcal{X}_8-2\,i\,\mathcal{E}\,p^5\,\mathcal{X}_{13}\dagger\mathcal{X}_8-2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{17}\dagger\mathcal{X}_8+2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{17}\dagger\mathcal{X}_8+2\,i\,\mathcal{E}^4\,p^2\,\mathcal{X}_{22}\dagger\mathcal{X}_8-$$
$$2\,i\,\mathcal{E}^2\,p^4\,\mathcal{X}_{22}\dagger\mathcal{X}_8+\mathcal{E}\,p^5\,\mathcal{X}_5\dagger\mathcal{X}_8-\mathcal{E}^3\,p^3\,\mathcal{X}_2\,\mathcal{X}_8\dagger+\mathcal{E}\,p^5\,\mathcal{X}_2\,\mathcal{X}_8\dagger+\mathcal{E}^3\,p^3\,\mathcal{X}_5\,\mathcal{X}_8\dagger+\mathcal{E}^2\,p^4\,\mathcal{X}_8\,\mathcal{X}_8\dagger+$$

$$\mathcal{E}^3 p^3 \chi_{12}\dagger\chi_9 + 2i\mathcal{E}^4 p^2 \chi_{14}\dagger\chi_9 - 2i\mathcal{E}^2 p^4 \chi_{14}\dagger\chi_9 - 2i\mathcal{E}^5 p \chi_{18}\dagger\chi_9 + 2i\mathcal{E}^3 p^3 \chi_{18}\dagger\chi_9 + 2i\mathcal{E}^5 p \chi_{28}\dagger\chi_9 - 2i\mathcal{E}^3 p^3 \chi_{28}\dagger\chi_9 + \mathcal{E} p^5 \chi_{12}\chi_9\dagger - \mathcal{E}^2 p^4 \chi_3\chi_9\dagger + p^6 \chi_3\chi_9\dagger + \mathcal{E}^2 p^4 \chi_9\chi_9\dagger\Big),$$

$$\Big(\mathcal{E}^4 p^2 \chi_{10}\chi_{10}\dagger - \mathcal{E}^2 p^4 \chi_{10}\chi_{10}\dagger + \mathcal{E}^2 p^4 \chi_{12}\chi_{12}\dagger + \mathcal{E}^4 p^2 \chi_2\chi_2\dagger - 2\mathcal{E}^2 p^4 \chi_2\chi_2\dagger + p^6 \chi_2\chi_2\dagger - \mathcal{E}^3 p^3 \chi_{12}\dagger\chi_3 + \mathcal{E} p^5 \chi_{12}\dagger\chi_3 - \mathcal{E}^3 p^3 \chi_{12}\chi_3\dagger + \mathcal{E} p^5 \chi_{12}\chi_3\dagger + \mathcal{E}^4 p^2 \chi_3\chi_3\dagger - 2\mathcal{E}^2 p^4 \chi_3\chi_3\dagger + p^6 \chi_3\chi_3\dagger - \mathcal{E}^4 p^2 \chi_2\dagger\chi_5 + \mathcal{E}^2 p^4 \chi_2\dagger\chi_5 - \mathcal{E}^4 p^2 \chi_2\chi_5\dagger + \mathcal{E}^2 p^4 \chi_2\chi_5\dagger + \mathcal{E}^4 p^2 \chi_5\chi_5\dagger - \mathcal{E}^4 p^2 \chi_{10}\dagger\chi_7 + \mathcal{E}^2 p^4 \chi_{10}\dagger\chi_7 - \mathcal{E}^4 p^2 \chi_{10}\chi_7\dagger + \mathcal{E}^2 p^4 \chi_{10}\chi_7\dagger + \mathcal{E}^4 p^2 \chi_7\chi_7\dagger - \mathcal{E}^2 p^4 \chi_7\chi_7\dagger - \mathcal{E}^3 p^3 \chi_2\dagger\chi_8 + \mathcal{E} p^5 \chi_2\dagger\chi_8 + \mathcal{E}^3 p^3 \chi_5\dagger\chi_8 - \mathcal{E}^3 p^3 \chi_2\chi_8\dagger + \mathcal{E} p^5 \chi_2\chi_8\dagger + \mathcal{E}^3 p^3 \chi_5\chi_8\dagger + \mathcal{E}^2 p^4 \chi_8\chi_8\dagger + \mathcal{E}^3 p^3 \chi_{12}\dagger\chi_9 - \mathcal{E}^4 p^2 \chi_3\dagger\chi_9 + \mathcal{E}^2 p^4 \chi_3\dagger\chi_9 + \mathcal{E}^3 p^3 \chi_{12}\chi_9\dagger - \mathcal{E}^4 p^2 \chi_3\chi_9\dagger + \mathcal{E}^2 p^4 \chi_3\chi_9\dagger + \mathcal{E}^4 p^2 \chi_9\chi_9\dagger\Big)\Big/$$

$$\Big(2\mathcal{E}^2 t_1 (\mathcal{E}^2 - p^2)(1 + \mathcal{E}^2 - p^2)^2\Big),\ \frac{1}{2\mathcal{E}^2 t_1 (\mathcal{E}^2 - p^2)(1 + \mathcal{E}^2 - p^2)}$$

$$\Big(\mathcal{E}^2 p^4 \chi_{12}\chi_{12}\dagger - 2i\mathcal{E}^3 p^3 \chi_{12}\dagger\chi_{14} + 2i\mathcal{E} p^5 \chi_{12}\dagger\chi_{14} + 2i\mathcal{E}^4 p^2 \chi_{12}\dagger\chi_{18} - 2i\mathcal{E}^2 p^4 \chi_{12}\dagger\chi_{18} - 2i\mathcal{E}^4 p^2 \chi_{10}\dagger\chi_{20} + 2i\mathcal{E}^2 p^4 \chi_{10}\dagger\chi_{20} + 2i\mathcal{E}^5 p \chi_{10}\dagger\chi_{24} - 2i\mathcal{E}^3 p^3 \chi_{10}\dagger\chi_{24} + 2i\mathcal{E}^4 p^2 \chi_{10}\dagger\chi_{25} - 2i\mathcal{E}^2 p^4 \chi_{10}\dagger\chi_{25} - 2i\mathcal{E}^4 p^2 \chi_{12}\dagger\chi_{28} + 2i\mathcal{E}^2 p^4 \chi_{12}\dagger\chi_{28} - 2i\mathcal{E}^5 p \chi_{10}\dagger\chi_{29} + 2i\mathcal{E}^3 p^3 \chi_{10}\dagger\chi_{29} + 2i\mathcal{E}^4 p^2 \chi_{13}\chi_2\dagger - 4i\mathcal{E}^2 p^4 \chi_{13}\chi_2\dagger + 2i p^6 \chi_{13}\chi_2\dagger - 2i\mathcal{E}^5 p \chi_{17}\chi_2\dagger + 4i\mathcal{E}^3 p^3 \chi_{17}\chi_2\dagger - 2i\mathcal{E} p^5 \chi_{17}\chi_2\dagger + 2i\mathcal{E}^5 p \chi_{22}\chi_2\dagger - 4i\mathcal{E}^3 p^3 \chi_{22}\chi_2\dagger + 2i\mathcal{E} p^5 \chi_{22}\chi_2\dagger - \mathcal{E}^3 p^3 \chi_{12}\chi_3\dagger + \mathcal{E} p^5 \chi_{12}\chi_3\dagger + 2i\mathcal{E}^4 p^2 \chi_{14}\chi_3\dagger - 4i\mathcal{E}^2 p^4 \chi_{14}\chi_3\dagger + 2i p^6 \chi_{14}\chi_3\dagger - 2i\mathcal{E}^5 p \chi_{18}\chi_3\dagger + 4i\mathcal{E}^3 p^3 \chi_{18}\chi_3\dagger - 2i\mathcal{E} p^5 \chi_{18}\chi_3\dagger + 2i\mathcal{E}^5 p \chi_{28}\chi_3\dagger - 4i\mathcal{E}^3 p^3 \chi_{28}\chi_3\dagger + 2i\mathcal{E} p^5 \chi_{28}\chi_3\dagger - \mathcal{E}^2 p^4 \chi_2\dagger\chi_5 + p^6 \chi_2\dagger\chi_5 - 2i\mathcal{E}^4 p^2 \chi_{13}\chi_5\dagger + 2i\mathcal{E}^2 p^4 \chi_{13}\chi_5\dagger + 2i\mathcal{E}^5 p \chi_{17}\chi_5\dagger - 2i\mathcal{E}^3 p^3 \chi_{17}\chi_5\dagger - 2i\mathcal{E}^5 p \chi_{22}\chi_5\dagger + 2i\mathcal{E}^3 p^3 \chi_{22}\chi_5\dagger + \mathcal{E}^2 p^4 \chi_5\chi_5\dagger + 2i\mathcal{E}^4 p^2 \chi_{20}\chi_7\dagger - 2i\mathcal{E}^2 p^4 \chi_{20}\chi_7\dagger - 2i\mathcal{E}^5 p \chi_{24}\chi_7\dagger + 2i\mathcal{E}^3 p^3 \chi_{24}\chi_7\dagger - 2i\mathcal{E}^4 p^2 \chi_{25}\chi_7\dagger + 2i\mathcal{E}^2 p^4 \chi_{25}\chi_7\dagger + 2i\mathcal{E}^5 p \chi_{29}\chi_7\dagger - 2i\mathcal{E}^3 p^3 \chi_{29}\chi_7\dagger - \mathcal{E}^3 p^3 \chi_2\dagger\chi_8 + \mathcal{E} p^5 \chi_2\dagger\chi_8 + \mathcal{E}^3 p^3 \chi_5\dagger\chi_8 - 2i\mathcal{E}^3 p^3 \chi_{13}\chi_8\dagger + 2i\mathcal{E} p^5 \chi_{13}\chi_8\dagger + 2i\mathcal{E}^4 p^2 \chi_{17}\chi_8\dagger - 2i\mathcal{E}^2 p^4 \chi_{17}\chi_8\dagger - 2i\mathcal{E}^4 p^2 \chi_{22}\chi_8\dagger + 2i\mathcal{E}^2 p^4 \chi_{22}\chi_8\dagger + \mathcal{E} p^5 \chi_5\chi_8\dagger + \mathcal{E}^2 p^4 \chi_8\chi_8\dagger + \mathcal{E} p^5 \chi_{12}\dagger\chi_9 - \mathcal{E}^2 p^4 \chi_3\dagger\chi_9 + p^6 \chi_3\dagger\chi_9 + \mathcal{E}^3 p^3 \chi_{12}\chi_9\dagger - 2i\mathcal{E}^4 p^2 \chi_{14}\chi_9\dagger + 2i\mathcal{E}^2 p^4 \chi_{14}\chi_9\dagger + 2i\mathcal{E}^5 p \chi_{18}\chi_9\dagger - 2i\mathcal{E}^3 p^3 \chi_{18}\chi_9\dagger - 2i\mathcal{E}^5 p \chi_{28}\chi_9\dagger + 2i\mathcal{E}^3 p^3 \chi_{28}\chi_9\dagger + \mathcal{E}^2 p^4 \chi_9\chi_9\dagger\Big),$$

$$\Big(\mathcal{E}^4 p^2 \chi_{10}\chi_{10}\dagger - \mathcal{E}^2 p^4 \chi_{10}\chi_{10}\dagger + \mathcal{E}^2 p^4 \chi_{12}\chi_{12}\dagger + \mathcal{E}^4 p^2 \chi_2\chi_2\dagger - 2\mathcal{E}^2 p^4 \chi_2\chi_2\dagger + p^6 \chi_2\chi_2\dagger - \mathcal{E}^3 p^3 \chi_{12}\dagger\chi_3 + \mathcal{E} p^5 \chi_{12}\dagger\chi_3 - \mathcal{E}^3 p^3 \chi_{12}\chi_3\dagger + \mathcal{E} p^5 \chi_{12}\chi_3\dagger + \mathcal{E}^4 p^2 \chi_3\chi_3\dagger - 2\mathcal{E}^2 p^4 \chi_3\chi_3\dagger + p^6 \chi_3\chi_3\dagger - \mathcal{E}^4 p^2 \chi_2\dagger\chi_5 + \mathcal{E}^2 p^4 \chi_2\dagger\chi_5 - \mathcal{E}^4 p^2 \chi_2\chi_5\dagger + \mathcal{E}^2 p^4 \chi_2\chi_5\dagger + \mathcal{E}^4 p^2 \chi_5\chi_5\dagger - \mathcal{E}^4 p^2 \chi_{10}\dagger\chi_7 + \mathcal{E}^2 p^4 \chi_{10}\dagger\chi_7 - \mathcal{E}^4 p^2 \chi_{10}\chi_7\dagger + \mathcal{E}^2 p^4 \chi_{10}\chi_7\dagger + \mathcal{E}^4 p^2 \chi_7\chi_7\dagger - \mathcal{E}^2 p^4 \chi_7\chi_7\dagger - \mathcal{E}^3 p^3 \chi_2\dagger\chi_8 + \mathcal{E} p^5 \chi_2\dagger\chi_8 + \mathcal{E}^3 p^3 \chi_5\dagger\chi_8 - \mathcal{E}^3 p^3 \chi_2\chi_8\dagger + \mathcal{E} p^5 \chi_2\chi_8\dagger + \mathcal{E}^3 p^3 \chi_5\chi_8\dagger + \mathcal{E}^2 p^4 \chi_8\chi_8\dagger + \mathcal{E}^3 p^3 \chi_{12}\dagger\chi_9 - \mathcal{E}^4 p^2 \chi_3\dagger\chi_9 + \mathcal{E}^2 p^4 \chi_3\dagger\chi_9 + \mathcal{E}^3 p^3 \chi_{12}\chi_9\dagger - \mathcal{E}^4 p^2 \chi_3\chi_9\dagger + \mathcal{E}^2 p^4 \chi_3\chi_9\dagger + \mathcal{E}^4 p^2 \chi_9\chi_9\dagger\Big)\Big/\Big(2\mathcal{E}^2 t_1 (\mathcal{E}^2 - p^2)(1 + \mathcal{E}^2 - p^2)^2\Big),$$

$$\frac{1}{2\mathcal{E}^2 t_1 (1 + \mathcal{E}^2 - p^2)^2}\Big(\mathcal{E}^4 p^2 \chi_{10}\chi_{10}\dagger - \mathcal{E}^2 p^4 \chi_{10}\chi_{10}\dagger + \mathcal{E}^2 p^4 \chi_{12}\chi_{12}\dagger + \mathcal{E}^4 p^2 \chi_2\chi_2\dagger - 2\mathcal{E}^2 p^4 \chi_2\chi_2\dagger + p^6 \chi_2\chi_2\dagger - \mathcal{E}^3 p^3 \chi_{12}\dagger\chi_3 + \mathcal{E} p^5 \chi_{12}\dagger\chi_3 - \mathcal{E}^3 p^3 \chi_{12}\chi_3\dagger + \mathcal{E} p^5 \chi_{12}\chi_3\dagger + \mathcal{E}^4 p^2 \chi_3\chi_3\dagger - 2\mathcal{E}^2 p^4 \chi_3\chi_3\dagger + p^6 \chi_3\chi_3\dagger - \mathcal{E}^4 p^2 \chi_2\dagger\chi_5 + \mathcal{E}^2 p^4 \chi_2\dagger\chi_5 - \mathcal{E}^4 p^2 \chi_2\chi_5\dagger + \mathcal{E}^2 p^4 \chi_2\chi_5\dagger + \mathcal{E}^4 p^2 \chi_5\chi_5\dagger - \mathcal{E}^4 p^2 \chi_{10}\dagger\chi_7 + \mathcal{E}^2 p^4 \chi_{10}\dagger\chi_7 - \mathcal{E}^4 p^2 \chi_{10}\chi_7\dagger + \mathcal{E}^2 p^4 \chi_{10}\chi_7\dagger + \mathcal{E}^4 p^2 \chi_7\chi_7\dagger - \mathcal{E}^2 p^4 \chi_7\chi_7\dagger - \mathcal{E}^3 p^3 \chi_2\dagger\chi_8 + \mathcal{E} p^5 \chi_2\dagger\chi_8 + \mathcal{E}^3 p^3 \chi_5\dagger\chi_8 - \mathcal{E}^3 p^3 \chi_2\chi_8\dagger + \mathcal{E} p^5 \chi_2\chi_8\dagger + \mathcal{E}^3 p^3 \chi_5\chi_8\dagger + \mathcal{E}^2 p^4 \chi_8\chi_8\dagger + \mathcal{E}^3 p^3 \chi_{12}\dagger\chi_9 - \mathcal{E}^4 p^2 \chi_3\dagger\chi_9 + \mathcal{E}^2 p^4 \chi_3\dagger\chi_9 + \mathcal{E}^3 p^3 \chi_{12}\chi_9\dagger - \mathcal{E}^4 p^2 \chi_3\chi_9\dagger + \mathcal{E}^2 p^4 \chi_3\chi_9\dagger + \mathcal{E}^4 p^2 \chi_9\chi_9\dagger\Big),$$

$$\Big(-\mathcal{E}^2 p^4 \chi_{12}\chi_{12}\dagger - 2i\mathcal{E}^5 p \chi_{12}\chi_{14}\dagger + 2i\mathcal{E}^3 p^3 \chi_{12}\chi_{14}\dagger + 2i\mathcal{E}^4 p^2 \chi_{12}\chi_{18}\dagger - 2i\mathcal{E}^2 p^4 \chi_{12}\chi_{18}\dagger - 2i\mathcal{E}^4 p^2 \chi_{11}\chi_{19}\dagger + 2i\mathcal{E}^2 p^4 \chi_{11}\chi_{19}\dagger - 2i\mathcal{E}^5 p \chi_{12}\chi_{21}\dagger + 2i\mathcal{E}^3 p^3 \chi_{12}\chi_{21}\dagger + 2i\mathcal{E}^3 p^3 \chi_{11}\chi_{23}\dagger - 2i\mathcal{E} p^5 \chi_{11}\chi_{23}\dagger - 2i\mathcal{E}^4 p^2 \chi_{11}\chi_{26}\dagger + 2i\mathcal{E}^2 p^4 \chi_{11}\chi_{26}\dagger + 2i\mathcal{E}^3 p^3 \chi_{11}\chi_{30}\dagger - 2i\mathcal{E} p^5 \chi_{11}\chi_{30}\dagger +$$

$$\mathcal{E}^3 p^3 \chi_{12} \chi_3 \dagger - \mathcal{E} p^5 \chi_{12} \chi_3 \dagger + 2 i \mathcal{E}^5 p \chi_{19} \dagger \chi_4 - 4 i \mathcal{E}^3 p^3 \chi_{19} \dagger \chi_4 + 2 i \mathcal{E} p^5 \chi_{19} \dagger \chi_4 - 2 i \mathcal{E}^4 p^2 \chi_{23} \dagger \chi_4 +$$
$$4 i \mathcal{E}^2 p^4 \chi_{23} \dagger \chi_4 - 2 i p^6 \chi_{23} \dagger \chi_4 + 2 i \mathcal{E}^5 p \chi_{26} \dagger \chi_4 - 4 i \mathcal{E}^3 p^3 \chi_{26} \dagger \chi_4 + 2 i \mathcal{E} p^5 \chi_{26} \dagger \chi_4 - 2 i \mathcal{E}^4 p^2 \chi_{30} \dagger \chi_4 +$$
$$4 i \mathcal{E}^2 p^4 \chi_{30} \dagger \chi_4 - 2 i p^6 \chi_{30} \dagger \chi_4 - 2 i \mathcal{E}^4 p^2 \chi_{13} \dagger \chi_5 + 2 i \mathcal{E}^2 p^4 \chi_{13} \dagger \chi_5 + 2 i \mathcal{E}^3 p^3 \chi_{17} \dagger \chi_5 - 2 i \mathcal{E} p^5 \chi_{17} \dagger \chi_5 +$$
$$2 i \mathcal{E}^4 p^2 \chi_{27} \dagger \chi_5 - 2 i \mathcal{E}^2 p^4 \chi_{27} \dagger \chi_5 + \mathcal{E}^2 p^4 \chi_2 \dagger \chi_5 - p^6 \chi_2 \dagger \chi_5 - \mathcal{E}^2 p^4 \chi_5 \chi_5 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{19} \dagger \chi_6 +$$
$$2 i \mathcal{E}^2 p^4 \chi_{19} \dagger \chi_6 + 2 i \mathcal{E}^3 p^3 \chi_{23} \dagger \chi_6 - 2 i \mathcal{E} p^5 \chi_{23} \dagger \chi_6 - 2 i \mathcal{E}^4 p^2 \chi_{26} \dagger \chi_6 + 2 i \mathcal{E}^2 p^4 \chi_{26} \dagger \chi_6 +$$
$$2 i \mathcal{E}^3 p^3 \chi_{30} \dagger \chi_6 - 2 i \mathcal{E} p^5 \chi_{30} \dagger \chi_6 - 2 i \mathcal{E}^5 p \chi_{13} \dagger \chi_8 + 2 i \mathcal{E}^3 p^3 \chi_{13} \dagger \chi_8 + 2 i \mathcal{E}^4 p^2 \chi_{17} \dagger \chi_8 - 2 i \mathcal{E}^2 p^4 \chi_{17} \dagger \chi_8 +$$
$$2 i \mathcal{E}^5 p \chi_{27} \dagger \chi_8 - 2 i \mathcal{E}^3 p^3 \chi_{27} \dagger \chi_8 + \mathcal{E}^3 p^3 \chi_2 \dagger \chi_8 - \mathcal{E} p^5 \chi_2 \dagger \chi_8 - \mathcal{E}^3 p^3 \chi_5 \dagger \chi_8 - \mathcal{E} p^5 \chi_5 \chi_8 \dagger - \mathcal{E}^2 p^4 \chi_8 \chi_8 \dagger -$$
$$\mathcal{E} p^5 \chi_{12} \dagger \chi_9 - 2 i \mathcal{E}^4 p^2 \chi_{14} \dagger \chi_9 + 2 i \mathcal{E}^2 p^4 \chi_{14} \dagger \chi_9 + 2 i \mathcal{E}^3 p^3 \chi_{18} \dagger \chi_9 - 2 i \mathcal{E} p^5 \chi_{18} \dagger \chi_9 - 2 i \mathcal{E}^4 p^2 \chi_{21} \dagger \chi_9 +$$
$$2 i \mathcal{E}^2 p^4 \chi_{21} \dagger \chi_9 + \mathcal{E}^2 p^4 \chi_3 \dagger \chi_9 - p^6 \chi_3 \dagger \chi_9 - \mathcal{E}^3 p^3 \chi_{12} \chi_9 \dagger - \mathcal{E}^2 p^4 \chi_9 \chi_9 \dagger \Big) \Big/ \Big(\mathcal{E}^2 t_1 \left(1 + 2\mathcal{E}^2 - 2p^2\right) \left(\mathcal{E}^2 - p^2\right) \Big),$$

$$\Big(-\mathcal{E}^4 p^4 \chi_{11} \chi_{11} \dagger + \mathcal{E}^2 p^6 \chi_{11} \chi_{11} \dagger - \mathcal{E}^6 p^2 \chi_{12} \chi_{12} \dagger + \mathcal{E}^5 p^3 \chi_{11} \dagger \chi_4 - 2\mathcal{E}^3 p^5 \chi_{11} \dagger \chi_4 + \mathcal{E} p^7 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E}^5 p^3 \chi_{11} \chi_4 \dagger - 2\mathcal{E}^3 p^5 \chi_{11} \chi_4 \dagger + \mathcal{E} p^7 \chi_{11} \chi_4 \dagger - \mathcal{E}^6 p^2 \chi_4 \chi_4 \dagger + 3\mathcal{E}^4 p^4 \chi_4 \chi_4 \dagger - 3\mathcal{E}^2 p^6 \chi_4 \chi_4 \dagger + p^8 \chi_4 \chi_4 \dagger -$$
$$\mathcal{E}^4 p^4 \chi_5 \chi_5 \dagger - \mathcal{E}^4 p^4 \chi_{11} \dagger \chi_6 + \mathcal{E}^2 p^6 \chi_{11} \dagger \chi_6 + \mathcal{E}^5 p^3 \chi_4 \dagger \chi_6 - 2\mathcal{E}^3 p^5 \chi_4 \dagger \chi_6 + \mathcal{E} p^7 \chi_4 \dagger \chi_6 - \mathcal{E}^4 p^4 \chi_{11} \chi_6 \dagger +$$
$$\mathcal{E}^2 p^6 \chi_{11} \chi_6 \dagger + \mathcal{E}^5 p^3 \chi_4 \chi_6 \dagger - 2\mathcal{E}^3 p^5 \chi_4 \chi_6 \dagger + \mathcal{E} p^7 \chi_4 \chi_6 \dagger - \mathcal{E}^4 p^4 \chi_6 \chi_6 \dagger + \mathcal{E}^2 p^6 \chi_6 \chi_6 \dagger - \mathcal{E}^5 p^3 \chi_5 \dagger \chi_8 -$$
$$\mathcal{E}^5 p^3 \chi_5 \chi_8 \dagger - \mathcal{E}^6 p^2 \chi_8 \chi_8 \dagger - \mathcal{E}^5 p^3 \chi_{12} \dagger \chi_9 - \mathcal{E}^5 p^3 \chi_{12} \chi_9 \dagger - \mathcal{E}^4 p^4 \chi_9 \chi_9 \dagger \Big) \Big/ \Big(\mathcal{E}^4 t_1 \left(1 + 2\mathcal{E}^2 - 2p^2\right)^2 \left(\mathcal{E}^2 - p^2\right) \Big),$$

$$\Big(-\mathcal{E}^2 p^4 \chi_{12} \chi_{12} \dagger + 2 i \mathcal{E}^5 p \chi_{12} \dagger \chi_{14} - 2 i \mathcal{E}^3 p^3 \chi_{12} \dagger \chi_{14} - 2 i \mathcal{E}^4 p^2 \chi_{12} \dagger \chi_{18} + 2 i \mathcal{E}^2 p^4 \chi_{12} \dagger \chi_{18} +$$
$$2 i \mathcal{E}^4 p^2 \chi_{11} \dagger \chi_{19} - 2 i \mathcal{E}^2 p^4 \chi_{11} \dagger \chi_{19} + 2 i \mathcal{E}^5 p \chi_{12} \dagger \chi_{21} - 2 i \mathcal{E}^3 p^3 \chi_{12} \dagger \chi_{21} - 2 i \mathcal{E}^3 p^3 \chi_{11} \dagger \chi_{23} +$$
$$2 i \mathcal{E} p^5 \chi_{11} \dagger \chi_{23} + 2 i \mathcal{E}^4 p^2 \chi_{11} \dagger \chi_{26} - 2 i \mathcal{E}^2 p^4 \chi_{11} \dagger \chi_{26} + \mathcal{E}^3 p^3 \chi_{12} \dagger \chi_3 - \mathcal{E} p^5 \chi_{12} \dagger \chi_3 - 2 i \mathcal{E}^3 p^3 \chi_{11} \dagger \chi_{30} +$$
$$2 i \mathcal{E} p^5 \chi_{11} \dagger \chi_{30} - 2 i \mathcal{E}^5 p \chi_{19} \chi_4 \dagger + 4 i \mathcal{E}^3 p^3 \chi_{19} \chi_4 \dagger - 2 i \mathcal{E} p^5 \chi_{19} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{23} \chi_4 \dagger - 4 i \mathcal{E}^2 p^4 \chi_{23} \chi_4 \dagger +$$
$$2 i p^6 \chi_{23} \chi_4 \dagger - 2 i \mathcal{E}^5 p \chi_{26} \chi_4 \dagger + 4 i \mathcal{E}^3 p^3 \chi_{26} \chi_4 \dagger - 2 i \mathcal{E} p^5 \chi_{26} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{30} \chi_4 \dagger - 4 i \mathcal{E}^2 p^4 \chi_{30} \chi_4 \dagger +$$
$$2 i p^6 \chi_{30} \chi_4 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{13} \chi_5 \dagger - 2 i \mathcal{E}^2 p^4 \chi_{13} \chi_5 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{17} \chi_5 \dagger + 2 i \mathcal{E} p^5 \chi_{17} \chi_5 \dagger + \mathcal{E}^2 p^4 \chi_2 \chi_5 \dagger -$$
$$p^6 \chi_2 \chi_5 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{27} \chi_5 \dagger + 2 i \mathcal{E}^2 p^4 \chi_{27} \chi_5 \dagger - \mathcal{E}^2 p^4 \chi_5 \chi_5 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{19} \chi_6 \dagger - 2 i \mathcal{E}^2 p^4 \chi_{19} \chi_6 \dagger -$$
$$2 i \mathcal{E}^3 p^3 \chi_{23} \chi_6 \dagger + 2 i \mathcal{E} p^5 \chi_{23} \chi_6 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{26} \chi_6 \dagger - 2 i \mathcal{E}^2 p^4 \chi_{26} \chi_6 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{30} \chi_6 \dagger + 2 i \mathcal{E} p^5 \chi_{30} \chi_6 \dagger -$$
$$\mathcal{E} p^5 \chi_5 \dagger \chi_8 + 2 i \mathcal{E}^5 p \chi_{13} \chi_8 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{13} \chi_8 \dagger - 2 i \mathcal{E}^4 p^2 \chi_{17} \chi_8 \dagger + 2 i \mathcal{E}^2 p^4 \chi_{17} \chi_8 \dagger + \mathcal{E}^3 p^3 \chi_2 \chi_8 \dagger -$$
$$\mathcal{E} p^5 \chi_2 \chi_8 \dagger - 2 i \mathcal{E}^5 p \chi_{27} \chi_8 \dagger + 2 i \mathcal{E}^3 p^3 \chi_{27} \chi_8 \dagger - \mathcal{E}^3 p^3 \chi_5 \chi_8 \dagger - \mathcal{E}^2 p^4 \chi_8 \chi_8 \dagger - \mathcal{E}^3 p^3 \chi_{12} \dagger \chi_9 -$$
$$\mathcal{E} p^5 \chi_{12} \chi_9 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{14} \chi_9 \dagger - 2 i \mathcal{E}^2 p^4 \chi_{14} \chi_9 \dagger - 2 i \mathcal{E}^3 p^3 \chi_{18} \chi_9 \dagger + 2 i \mathcal{E} p^5 \chi_{18} \chi_9 \dagger + 2 i \mathcal{E}^4 p^2 \chi_{21} \chi_9 \dagger -$$
$$2 i \mathcal{E}^2 p^4 \chi_{21} \chi_9 \dagger + \mathcal{E}^2 p^4 \chi_3 \chi_9 \dagger - p^6 \chi_3 \chi_9 \dagger - \mathcal{E}^2 p^4 \chi_9 \chi_9 \dagger \Big) \Big/ \Big(\mathcal{E}^2 t_1 \left(1 + 2\mathcal{E}^2 - 2p^2\right) \left(\mathcal{E}^2 - p^2\right) \Big),$$

$$\Big(-\mathcal{E}^4 p^4 \chi_{11} \chi_{11} \dagger + \mathcal{E}^2 p^6 \chi_{11} \chi_{11} \dagger - \mathcal{E}^6 p^2 \chi_{12} \chi_{12} \dagger + \mathcal{E}^5 p^3 \chi_{11} \dagger \chi_4 - 2\mathcal{E}^3 p^5 \chi_{11} \dagger \chi_4 + \mathcal{E} p^7 \chi_{11} \dagger \chi_4 +$$
$$\mathcal{E}^5 p^3 \chi_{11} \chi_4 \dagger - 2\mathcal{E}^3 p^5 \chi_{11} \chi_4 \dagger + \mathcal{E} p^7 \chi_{11} \chi_4 \dagger - \mathcal{E}^6 p^2 \chi_4 \chi_4 \dagger + 3\mathcal{E}^4 p^4 \chi_4 \chi_4 \dagger - 3\mathcal{E}^2 p^6 \chi_4 \chi_4 \dagger + p^8 \chi_4 \chi_4 \dagger -$$
$$\mathcal{E}^4 p^4 \chi_5 \chi_5 \dagger - \mathcal{E}^4 p^4 \chi_{11} \dagger \chi_6 + \mathcal{E}^2 p^6 \chi_{11} \dagger \chi_6 + \mathcal{E}^5 p^3 \chi_4 \dagger \chi_6 - 2\mathcal{E}^3 p^5 \chi_4 \dagger \chi_6 + \mathcal{E} p^7 \chi_4 \dagger \chi_6 - \mathcal{E}^4 p^4 \chi_{11} \chi_6 \dagger +$$
$$\mathcal{E}^2 p^6 \chi_{11} \chi_6 \dagger + \mathcal{E}^5 p^3 \chi_4 \chi_6 \dagger - 2\mathcal{E}^3 p^5 \chi_4 \chi_6 \dagger + \mathcal{E} p^7 \chi_4 \chi_6 \dagger - \mathcal{E}^4 p^4 \chi_6 \chi_6 \dagger + \mathcal{E}^2 p^6 \chi_6 \chi_6 \dagger - \mathcal{E}^5 p^3 \chi_5 \dagger \chi_8 -$$
$$\mathcal{E}^5 p^3 \chi_5 \chi_8 \dagger - \mathcal{E}^6 p^2 \chi_8 \chi_8 \dagger - \mathcal{E}^5 p^3 \chi_{12} \dagger \chi_9 - \mathcal{E}^5 p^3 \chi_{12} \chi_9 \dagger - \mathcal{E}^4 p^4 \chi_9 \chi_9 \dagger \Big) \Big/ \Big(\mathcal{E}^4 t_1 \left(1 + 2\mathcal{E}^2 - 2p^2\right)^2 \left(\mathcal{E}^2 - p^2\right) \Big),$$

$$-\frac{1}{\mathcal{E}^4 t_1 \left(1 + 2\mathcal{E}^2 - 2p^2\right)^2} 2 \Big(\mathcal{E}^4 p^4 \chi_{11} \chi_{11} \dagger - \mathcal{E}^2 p^6 \chi_{11} \chi_{11} \dagger + \mathcal{E}^6 p^2 \chi_{12} \chi_{12} \dagger - \mathcal{E}^5 p^3 \chi_{11} \dagger \chi_4 + 2\mathcal{E}^3 p^5 \chi_{11} \dagger \chi_4 -$$
$$\mathcal{E} p^7 \chi_{11} \dagger \chi_4 - \mathcal{E}^5 p^3 \chi_{11} \chi_4 \dagger + 2\mathcal{E}^3 p^5 \chi_{11} \chi_4 \dagger - \mathcal{E} p^7 \chi_{11} \chi_4 \dagger + \mathcal{E}^6 p^2 \chi_4 \chi_4 \dagger - 3\mathcal{E}^4 p^4 \chi_4 \chi_4 \dagger +$$
$$3\mathcal{E}^2 p^6 \chi_4 \chi_4 \dagger - p^8 \chi_4 \chi_4 \dagger + \mathcal{E}^4 p^4 \chi_5 \chi_5 \dagger + \mathcal{E}^4 p^4 \chi_{11} \dagger \chi_6 - \mathcal{E}^2 p^6 \chi_{11} \dagger \chi_6 - \mathcal{E}^5 p^3 \chi_4 \dagger \chi_6 + 2\mathcal{E}^3 p^5 \chi_4 \dagger \chi_6 -$$
$$\mathcal{E} p^7 \chi_4 \dagger \chi_6 + \mathcal{E}^4 p^4 \chi_{11} \chi_6 \dagger - \mathcal{E}^2 p^6 \chi_{11} \chi_6 \dagger - \mathcal{E}^5 p^3 \chi_4 \chi_6 \dagger + 2\mathcal{E}^3 p^5 \chi_4 \chi_6 \dagger - \mathcal{E} p^7 \chi_4 \chi_6 \dagger + \mathcal{E}^4 p^4 \chi_6 \chi_6 \dagger -$$
$$\mathcal{E}^2 p^6 \chi_6 \chi_6 \dagger + \mathcal{E}^5 p^3 \chi_5 \dagger \chi_8 + \mathcal{E}^5 p^3 \chi_5 \chi_8 \dagger + \mathcal{E}^6 p^2 \chi_8 \chi_8 \dagger + \mathcal{E}^5 p^3 \chi_{12} \dagger \chi_9 + \mathcal{E}^5 p^3 \chi_{12} \chi_9 \dagger + \mathcal{E}^4 p^4 \chi_9 \chi_9 \dagger \Big) \Big\},$$

$$\Big\{ \frac{1}{6 \mathcal{E}^4 t_1 \left(\mathcal{E}^2 - p^2\right)^2} \Big(-4\mathcal{E}^4 p^4 \chi_{10} \chi_{10} \dagger + 4\mathcal{E}^2 p^6 \chi_{10} \chi_{10} \dagger - 3\mathcal{E}^2 p^6 \chi_{12} \chi_{12} \dagger - 12\mathcal{E}^8 \chi_{13} \chi_{13} \dagger +$$

$$24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_{13}\,\dagger - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_{13}\,\dagger + 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{14} - 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{14} - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_{14}\,\dagger + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_{14}\,\dagger - 12\,\mathcal{E}^8\,\mathcal{X}_{14}\,\mathcal{X}_{14}\,\dagger + 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_{14}\,\dagger - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_{14}\,\dagger + 8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{15} - 16\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{15} + 8\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{15} - 8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_{15}\,\dagger + 16\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_{15}\,\dagger - 8\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{10}\,\mathcal{X}_{15}\,\dagger - 16\,\mathcal{E}^8\,\mathcal{X}_{15}\,\mathcal{X}_{15}\,\dagger + 48\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\mathcal{X}_{15}\,\dagger - 48\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\mathcal{X}_{15}\,\dagger + 16\,\mathcal{E}^2\,p^6\,\mathcal{X}_{15}\,\mathcal{X}_{15}\,\dagger + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_{17} - 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_{17} + 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_{17} + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{13}\,\mathcal{X}_{17}\,\dagger - 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{13}\,\mathcal{X}_{17}\,\dagger + 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{13}\,\mathcal{X}_{17}\,\dagger - 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{17}\,\mathcal{X}_{17}\,\dagger + 24\,\mathcal{E}^4\,p^4\,\mathcal{X}_{17}\,\mathcal{X}_{17}\,\dagger - 12\,\mathcal{E}^2\,p^6\,\mathcal{X}_{17}\,\mathcal{X}_{17}\,\dagger - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{18} + 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{18} + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_{18} - 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_{18} + 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_{18} + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{18}\,\dagger - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{12}\,\mathcal{X}_{18}\,\dagger + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{14}\,\mathcal{X}_{18}\,\dagger - 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{14}\,\mathcal{X}_{18}\,\dagger + 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{14}\,\mathcal{X}_{18}\,\dagger - 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{18}\,\mathcal{X}_{18}\,\dagger + 24\,\mathcal{E}^4\,p^4\,\mathcal{X}_{18}\,\mathcal{X}_{18}\,\dagger - 12\,\mathcal{E}^2\,p^6\,\mathcal{X}_{18}\,\mathcal{X}_{18}\,\dagger - 12\,\mathcal{E}^8\,\mathcal{X}_{19}\,\mathcal{X}_{19}\,\dagger + 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{19}\,\mathcal{X}_{19}\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_2 - 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_2 + 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_2 - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_2 + 12\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_2 - 6\,i\,\mathcal{E}\,p^7\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_2 + 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{20} - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{20} - 8\,\mathcal{E}^8\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{20} + 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{20} - 8\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{20} - 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_{20}\,\dagger + 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_{20}\,\dagger - 8\,\mathcal{E}^8\,\mathcal{X}_{15}\,\mathcal{X}_{20}\,\dagger + 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\mathcal{X}_{20}\,\dagger - 8\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\mathcal{X}_{20}\,\dagger - 16\,\mathcal{E}^8\,\mathcal{X}_{20}\,\mathcal{X}_{20}\,\dagger + 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{20}\,\mathcal{X}_{20}\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{21} + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{21} + 12\,\mathcal{E}^8\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_{21} - 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_{21} + 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_{21} - 12\,\mathcal{E}^7\,p\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_{21} + 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_{21} - 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_{21} + 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_{21}\,\dagger - 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_{21}\,\dagger + 12\,\mathcal{E}^8\,\mathcal{X}_{14}\,\mathcal{X}_{21}\,\dagger - 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_{21}\,\dagger + 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_{21}\,\dagger - 12\,\mathcal{E}^7\,p\,\mathcal{X}_{18}\,\mathcal{X}_{21}\,\dagger + 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_{21}\,\dagger - 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\mathcal{X}_{21}\,\dagger - 12\,\mathcal{E}^8\,\mathcal{X}_{21}\,\mathcal{X}_{21}\,\dagger + 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{21}\,\mathcal{X}_{21}\,\dagger - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{21}\,\mathcal{X}_{21}\,\dagger + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{19}\,\dagger\,\mathcal{X}_{23} - 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{19}\,\dagger\,\mathcal{X}_{23} + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{19}\,\mathcal{X}_{23}\,\dagger - 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{19}\,\mathcal{X}_{23}\,\dagger - 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{23}\,\mathcal{X}_{23}\,\dagger + 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{23}\,\mathcal{X}_{23}\,\dagger - 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{24} + 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{24} + 8\,\mathcal{E}^7\,p\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{24} - 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{24} + 8\,\mathcal{E}^3\,p^5\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{24} + 16\,\mathcal{E}^7\,p\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_{24} - 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_{24} + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{10}\,\mathcal{X}_{24}\,\dagger - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{10}\,\mathcal{X}_{24}\,\dagger + 8\,\mathcal{E}^7\,p\,\mathcal{X}_{15}\,\mathcal{X}_{24}\,\dagger - 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{15}\,\mathcal{X}_{24}\,\dagger + 8\,\mathcal{E}^3\,p^5\,\mathcal{X}_{15}\,\mathcal{X}_{24}\,\dagger + 16\,\mathcal{E}^7\,p\,\mathcal{X}_{20}\,\mathcal{X}_{24}\,\dagger - 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{20}\,\mathcal{X}_{24}\,\dagger - 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{24}\,\mathcal{X}_{24}\,\dagger + 16\,\mathcal{E}^4\,p^4\,\mathcal{X}_{24}\,\mathcal{X}_{24}\,\dagger - 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{25} + 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{25} + 8\,\mathcal{E}^8\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{25} - 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{25} + 8\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{25} - 8\,\mathcal{E}^8\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_{25} + 8\,\mathcal{E}^6\,p^2\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_{25} + 8\,\mathcal{E}^7\,p\,\mathcal{X}_{24}\,\dagger\,\mathcal{X}_{25} - 8\,\mathcal{E}^5\,p^3\,\mathcal{X}_{24}\,\dagger\,\mathcal{X}_{25} + 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\mathcal{X}_{25}\,\dagger - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_{25}\,\dagger + 8\,\mathcal{E}^8\,\mathcal{X}_{15}\,\mathcal{X}_{25}\,\dagger - 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\mathcal{X}_{25}\,\dagger + 8\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\mathcal{X}_{25}\,\dagger - 8\,\mathcal{E}^8\,\mathcal{X}_{20}\,\mathcal{X}_{25}\,\dagger + 8\,\mathcal{E}^6\,p^2\,\mathcal{X}_{20}\,\mathcal{X}_{25}\,\dagger + 8\,\mathcal{E}^7\,p\,\mathcal{X}_{24}\,\mathcal{X}_{25}\,\dagger - 8\,\mathcal{E}^5\,p^3\,\mathcal{X}_{24}\,\mathcal{X}_{25}\,\dagger - 16\,\mathcal{E}^8\,\mathcal{X}_{25}\,\mathcal{X}_{25}\,\dagger + 16\,\mathcal{E}^6\,p^2\,\mathcal{X}_{25}\,\mathcal{X}_{25}\,\dagger + 12\,\mathcal{E}^8\,\mathcal{X}_{19}\,\dagger\,\mathcal{X}_{26} - 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{19}\,\dagger\,\mathcal{X}_{26} - 12\,\mathcal{E}^7\,p\,\mathcal{X}_{23}\,\dagger\,\mathcal{X}_{26} + 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{23}\,\dagger\,\mathcal{X}_{26} + 12\,\mathcal{E}^8\,\mathcal{X}_{19}\,\mathcal{X}_{26}\,\dagger - 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{19}\,\mathcal{X}_{26}\,\dagger - 12\,\mathcal{E}^7\,p\,\mathcal{X}_{23}\,\mathcal{X}_{26}\,\dagger + 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{23}\,\mathcal{X}_{26}\,\dagger - 12\,\mathcal{E}^8\,\mathcal{X}_{26}\,\mathcal{X}_{26}\,\dagger + 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{26}\,\mathcal{X}_{26}\,\dagger - 12\,\mathcal{E}^8\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_{27} + 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_{27} - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_{27} + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_{27} - 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_{27} + 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_{27} - 12\,\mathcal{E}^8\,\mathcal{X}_{13}\,\mathcal{X}_{27}\,\dagger + 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_{27}\,\dagger - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_{27}\,\dagger + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{17}\,\mathcal{X}_{27}\,\dagger - 24\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_{27}\,\dagger + 12\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\mathcal{X}_{27}\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_2\,\mathcal{X}_{27}\,\dagger - 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_2\,\mathcal{X}_{27}\,\dagger + 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_2\,\mathcal{X}_{27}\,\dagger - 12\,\mathcal{E}^8\,\mathcal{X}_{27}\,\mathcal{X}_{27}\,\dagger + 24\,\mathcal{E}^6\,p^2\,\mathcal{X}_{27}\,\mathcal{X}_{27}\,\dagger - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{27}\,\mathcal{X}_{27}\,\dagger + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{29} - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{29} - 8\,\mathcal{E}^7\,p\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{29} + 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{29} - 8\,\mathcal{E}^3\,p^5\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_{29} + 8\,\mathcal{E}^7\,p\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_{29} - 8\,\mathcal{E}^5\,p^3\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_{29} - 8\,\mathcal{E}^6\,p^2\,\mathcal{X}_{24}\,\dagger\,\mathcal{X}_{29} + 8\,\mathcal{E}^4\,p^4\,\mathcal{X}_{24}\,\dagger\,\mathcal{X}_{29} + 16\,\mathcal{E}^7\,p\,\mathcal{X}_{25}\,\dagger\,\mathcal{X}_{29} - 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{25}\,\dagger\,\mathcal{X}_{29} - 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{10}\,\mathcal{X}_{29}\,\dagger + 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{10}\,\mathcal{X}_{29}\,\dagger - 8\,\mathcal{E}^7\,p\,\mathcal{X}_{15}\,\mathcal{X}_{29}\,\dagger + 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{15}\,\mathcal{X}_{29}\,\dagger - 8\,\mathcal{E}^3\,p^5\,\mathcal{X}_{15}\,\mathcal{X}_{29}\,\dagger + 8\,\mathcal{E}^7\,p\,\mathcal{X}_{20}\,\mathcal{X}_{29}\,\dagger - 8\,\mathcal{E}^5\,p^3\,\mathcal{X}_{20}\,\mathcal{X}_{29}\,\dagger - 8\,\mathcal{E}^6\,p^2\,\mathcal{X}_{24}\,\mathcal{X}_{29}\,\dagger + 8\,\mathcal{E}^4\,p^4\,\mathcal{X}_{24}\,\mathcal{X}_{29}\,\dagger + 16\,\mathcal{E}^7\,p\,\mathcal{X}_{25}\,\mathcal{X}_{29}\,\dagger - 16\,\mathcal{E}^5\,p^3\,\mathcal{X}_{25}\,\mathcal{X}_{29}\,\dagger + 16\,\mathcal{E}^4\,p^4\,\mathcal{X}_{29}\,\mathcal{X}_{29}\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_2\,\dagger + 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_2\,\dagger - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{13}\,\mathcal{X}_2\,\dagger + 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_2\,\dagger - 12\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\mathcal{X}_2\,\dagger + 6\,i\,\mathcal{E}\,p^7\,\mathcal{X}_{17}\,\mathcal{X}_2\,\dagger - 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_2\,\mathcal{X}_2\,\dagger + 6\,\mathcal{E}^2\,p^6\,\mathcal{X}_2\,\mathcal{X}_2\,\dagger - 3\,p^8\,\mathcal{X}_2\,\mathcal{X}_2\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{27}\,\mathcal{X}_2\,\dagger + 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{27}\,\mathcal{X}_2\,\dagger - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{27}\,\mathcal{X}_2\,\dagger + 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_3 - 3\,\mathcal{E}\,p^7\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_3 + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_3 - 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_3 + 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_3 - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_3 + 12\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_3 - 6\,i\,\mathcal{E}\,p^7\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_3 - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{21}\,\dagger\,\mathcal{X}_3 + 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{21}\,\dagger\,\mathcal{X}_3 - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{21}\,\dagger\,\mathcal{X}_3 - 12\,\mathcal{E}^7\,p\,\mathcal{X}_{19}\,\dagger\,\mathcal{X}_{30} + 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{19}\,\dagger\,\mathcal{X}_{30} + 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{23}\,\dagger\,\mathcal{X}_{30} - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{23}\,\dagger\,\mathcal{X}_{30} + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{26}\,\dagger\,\mathcal{X}_{30} - 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{26}\,\dagger\,\mathcal{X}_{30} - 12\,\mathcal{E}^7\,p\,\mathcal{X}_{19}\,\mathcal{X}_{30}\,\dagger + 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{19}\,\mathcal{X}_{30}\,\dagger + 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{23}\,\mathcal{X}_{30}\,\dagger - 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{23}\,\mathcal{X}_{30}\,\dagger + 12\,\mathcal{E}^7\,p\,\mathcal{X}_{26}\,\mathcal{X}_{30}\,\dagger - 12\,\mathcal{E}^5\,p^3\,\mathcal{X}_{26}\,\mathcal{X}_{30}\,\dagger - 12\,\mathcal{E}^6\,p^2\,\mathcal{X}_{30}\,\mathcal{X}_{30}\,\dagger + 12\,\mathcal{E}^4\,p^4\,\mathcal{X}_{30}\,\mathcal{X}_{30}\,\dagger + 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_3\,\dagger - 3\,\mathcal{E}\,p^7\,\mathcal{X}_{12}\,\mathcal{X}_3\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_3\,\dagger + 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_3\,\dagger - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{14}\,\mathcal{X}_3\,\dagger +$$

$$6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_3\,\dagger - 12\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\mathcal{X}_3\,\dagger + 6\,i\,\mathcal{E}\,p^7\,\mathcal{X}_{18}\,\mathcal{X}_3\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{21}\,\mathcal{X}_3\,\dagger - 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{21}\,\mathcal{X}_3\,\dagger +$$
$$6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{21}\,\mathcal{X}_3\,\dagger - 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_3\,\mathcal{X}_3\,\dagger + 6\,\mathcal{E}^2\,p^6\,\mathcal{X}_3\,\mathcal{X}_3\,\dagger - 3\,p^8\,\mathcal{X}_3\,\mathcal{X}_3\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_5 + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_5 +$$
$$6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_5 - 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_5 - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{27}\,\dagger\,\mathcal{X}_5 + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{27}\,\dagger\,\mathcal{X}_5 + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_2\,\dagger\,\mathcal{X}_5 -$$
$$3\,\mathcal{E}^2\,p^6\,\mathcal{X}_2\,\dagger\,\mathcal{X}_5 + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_5\,\dagger - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_5\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_5\,\dagger + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\mathcal{X}_5\,\dagger +$$
$$3\,\mathcal{E}^4\,p^4\,\mathcal{X}_2\,\mathcal{X}_5\,\dagger - 3\,\mathcal{E}^2\,p^6\,\mathcal{X}_2\,\mathcal{X}_5\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{27}\,\mathcal{X}_5\,\dagger - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{27}\,\mathcal{X}_5\,\dagger - 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_5\,\mathcal{X}_5\,\dagger +$$
$$4\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_7 - 4\,\mathcal{E}^2\,p^6\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_7 + 8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_7 - 16\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_7 + 8\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{15}\,\dagger\,\mathcal{X}_7 +$$
$$4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_7 - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{20}\,\dagger\,\mathcal{X}_7 - 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{24}\,\dagger\,\mathcal{X}_7 + 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{24}\,\dagger\,\mathcal{X}_7 - 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{25}\,\dagger\,\mathcal{X}_7 +$$
$$4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{25}\,\dagger\,\mathcal{X}_7 + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{29}\,\dagger\,\mathcal{X}_7 - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{29}\,\dagger\,\mathcal{X}_7 + 4\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\mathcal{X}_7\,\dagger - 4\,\mathcal{E}^2\,p^6\,\mathcal{X}_{10}\,\mathcal{X}_7\,\dagger -$$
$$8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{15}\,\mathcal{X}_7\,\dagger + 16\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{15}\,\mathcal{X}_7\,\dagger - 8\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{15}\,\mathcal{X}_7\,\dagger - 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{20}\,\mathcal{X}_7\,\dagger + 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{20}\,\mathcal{X}_7\,\dagger +$$
$$4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{24}\,\mathcal{X}_7\,\dagger - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{24}\,\mathcal{X}_7\,\dagger + 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{25}\,\mathcal{X}_7\,\dagger - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{25}\,\mathcal{X}_7\,\dagger - 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{29}\,\mathcal{X}_7\,\dagger +$$
$$4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{29}\,\mathcal{X}_7\,\dagger - 4\,\mathcal{E}^4\,p^4\,\mathcal{X}_7\,\mathcal{X}_7\,\dagger + 4\,\mathcal{E}^2\,p^6\,\mathcal{X}_7\,\mathcal{X}_7\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_8 + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{13}\,\dagger\,\mathcal{X}_8 +$$
$$6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_8 - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{17}\,\dagger\,\mathcal{X}_8 - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{27}\,\dagger\,\mathcal{X}_8 + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{27}\,\dagger\,\mathcal{X}_8 + 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_2\,\dagger\,\mathcal{X}_8 -$$
$$3\,\mathcal{E}\,p^7\,\mathcal{X}_2\,\dagger\,\mathcal{X}_8 - 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_5\,\dagger\,\mathcal{X}_8 + 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{13}\,\mathcal{X}_8\,\dagger - 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{13}\,\mathcal{X}_8\,\dagger - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{17}\,\mathcal{X}_8\,\dagger +$$
$$6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{17}\,\mathcal{X}_8\,\dagger + 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_2\,\mathcal{X}_8\,\dagger - 3\,\mathcal{E}\,p^7\,\mathcal{X}_2\,\mathcal{X}_8\,\dagger + 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{27}\,\mathcal{X}_8\,\dagger - 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{27}\,\mathcal{X}_8\,\dagger - 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_5\,\mathcal{X}_8\,\dagger -$$
$$3\,\mathcal{E}^2\,p^6\,\mathcal{X}_8\,\mathcal{X}_8\,\dagger - 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_9 - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_9 + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\dagger\,\mathcal{X}_9 + 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_9 -$$
$$6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\dagger\,\mathcal{X}_9 + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{21}\,\dagger\,\mathcal{X}_9 - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{21}\,\dagger\,\mathcal{X}_9 + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_3\,\dagger\,\mathcal{X}_9 - 3\,\mathcal{E}^2\,p^6\,\mathcal{X}_3\,\dagger\,\mathcal{X}_9 -$$
$$3\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_9\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_9\,\dagger - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_9\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_9\,\dagger + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\mathcal{X}_9\,\dagger -$$
$$6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{21}\,\mathcal{X}_9\,\dagger + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{21}\,\mathcal{X}_9\,\dagger + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_3\,\mathcal{X}_9\,\dagger - 3\,\mathcal{E}^2\,p^6\,\mathcal{X}_3\,\mathcal{X}_9\,\dagger - 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_9\,\mathcal{X}_9\,\dagger\Big),$$

$$\frac{1}{\mathcal{E}^3\,t_1\,(\mathcal{E}^2 - p^2)}\Big(\mathcal{E}\,p^3\,\mathcal{X}_{11}\,\dagger\,{}^{2^+}\tau^{\parallel}_{00} - 2\,i\,\mathcal{E}^2\,p^2\,\mathcal{X}_{16}\,\dagger\,{}^{2^+}\tau^{\parallel}_{00} - \mathcal{E}^2\,p^2\,\mathcal{X}_4\,\dagger\,{}^{2^+}\tau^{\parallel}_{00} + p^4\,\mathcal{X}_4\,\dagger\,{}^{2^+}\tau^{\parallel}_{00} +$$
$$\mathcal{E}\,p^3\,\mathcal{X}_6\,\dagger\,{}^{2^+}\tau^{\parallel}_{00} - \mathcal{E}^3\,p\,\mathcal{X}_{12}\,\dagger\,{}^{2^+}\tau^{\parallel}_{01} + 2\,i\,\mathcal{E}^2\,p^2\,\mathcal{X}_{14}\,\dagger\,{}^{2^+}\tau^{\parallel}_{01} - 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{18}\,\dagger\,{}^{2^+}\tau^{\parallel}_{01} - \mathcal{E}^2\,p^2\,\mathcal{X}_9\,\dagger\,{}^{2^+}\tau^{\parallel}_{01} +$$
$$2\,i\,\mathcal{E}^2\,p^2\,\mathcal{X}_{13}\,\dagger\,{}^{2^+}\tau^{\parallel}_{02} - 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{17}\,\dagger\,{}^{2^+}\tau^{\parallel}_{02} - \mathcal{E}^2\,p^2\,\mathcal{X}_5\,\dagger\,{}^{2^+}\tau^{\parallel}_{02} - \mathcal{E}^3\,p\,\mathcal{X}_8\,\dagger\,{}^{2^+}\tau^{\parallel}_{02} + \mathcal{E}^2\,p^2\,\mathcal{X}_{11}\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} -$$
$$2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{16}\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} - \mathcal{E}^3\,p\,\mathcal{X}_4\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} + \mathcal{E}\,p^3\,\mathcal{X}_4\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} + \mathcal{E}^2\,p^2\,\mathcal{X}_6\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} - 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{28}\,\dagger\,{}^{2^+}\tau^{\parallel}_{10} +$$
$$2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{26}\,\dagger\,{}^{2^+}\tau^{\parallel}_{11} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{30}\,\dagger\,{}^{2^+}\tau^{\parallel}_{11} + 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{25}\,\dagger\,{}^{2^+}\tau^{\parallel}_{12} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{29}\,\dagger\,{}^{2^+}\tau^{\parallel}_{12} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{28}\,\dagger\,{}^{2^+}\tau^{\parallel}_{13} -$$
$$2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{22}\,\dagger\,{}^{2^+}\tau^{\parallel}_{20} + 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{20}\,\dagger\,{}^{2^+}\tau^{\parallel}_{21} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{24}\,\dagger\,{}^{2^+}\tau^{\parallel}_{21} + 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{19}\,\dagger\,{}^{2^+}\tau^{\parallel}_{22} -$$
$$2\,i\,\mathcal{E}^4\,\mathcal{X}_{23}\,\dagger\,{}^{2^+}\tau^{\parallel}_{22} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{22}\,\dagger\,{}^{2^+}\tau^{\parallel}_{23} - 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{16}\,\dagger\,{}^{2^+}\tau^{\parallel}_{30} + 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{14}\,\dagger\,{}^{2^+}\tau^{\parallel}_{31} -$$
$$2\,i\,\mathcal{E}^4\,\mathcal{X}_{18}\,\dagger\,{}^{2^+}\tau^{\parallel}_{31} + 2\,i\,\mathcal{E}^3\,p\,\mathcal{X}_{13}\,\dagger\,{}^{2^+}\tau^{\parallel}_{32} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{17}\,\dagger\,{}^{2^+}\tau^{\parallel}_{32} - 2\,i\,\mathcal{E}^4\,\mathcal{X}_{16}\,\dagger\,{}^{2^+}\tau^{\parallel}_{33}\Big),\ \frac{1}{6\,\mathcal{E}^4\,t_1\,(\mathcal{E}^2 - p^2)^2}$$

$$\Big(2\,\mathcal{E}^4\,p^4\,\mathcal{X}_{11}\,\mathcal{X}_{11}\,\dagger - 2\,\mathcal{E}^2\,p^6\,\mathcal{X}_{11}\,\mathcal{X}_{11}\,\dagger + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_{12}\,\mathcal{X}_{12}\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{14} + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{14} -$$
$$4\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{16} + 8\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{16} - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{16} + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{18} - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{18} +$$
$$4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{19} - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{19} - 4\,\mathcal{E}^4\,p^4\,\mathcal{X}_{11}\,\mathcal{X}_1\,\dagger + 4\,\mathcal{E}^2\,p^6\,\mathcal{X}_{11}\,\mathcal{X}_1\,\dagger + 8\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{16}\,\mathcal{X}_1\,\dagger -$$
$$16\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{16}\,\mathcal{X}_1\,\dagger + 8\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{16}\,\mathcal{X}_1\,\dagger + 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{19}\,\mathcal{X}_1\,\dagger - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{19}\,\mathcal{X}_1\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{20} +$$
$$6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{20} - 4\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{23} + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{23} - 4\,i\,\mathcal{E}^7\,p\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{23} + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{23} +$$
$$6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{24} - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{24} - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{25} + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{25} - 8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{26} +$$
$$8\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{26} + 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{26} - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{26} + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{28} - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_{28} +$$
$$6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{29} - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{29} - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_2\,\dagger + 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_2\,\dagger - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{13}\,\mathcal{X}_2\,\dagger +$$
$$6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{17}\,\mathcal{X}_2\,\dagger - 12\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_2\,\dagger + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{17}\,\mathcal{X}_2\,\dagger + 6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{22}\,\mathcal{X}_2\,\dagger - 12\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{22}\,\mathcal{X}_2\,\dagger +$$
$$6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{22}\,\mathcal{X}_2\,\dagger + 8\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{30} - 8\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_{30} - 4\,i\,\mathcal{E}^7\,p\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{30} + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{30} +$$
$$3\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_3\,\dagger - 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\mathcal{X}_3\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_3\,\dagger + 12\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_3\,\dagger - 6\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{14}\,\mathcal{X}_3\,\dagger +$$

$$6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{18}\,\mathcal{X}_3\,\dagger - 12\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_3\,\dagger + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{18}\,\mathcal{X}_3\,\dagger + 6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{28}\,\mathcal{X}_3\,\dagger - 12\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{28}\,\mathcal{X}_3\,\dagger +$$
$$6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{28}\,\mathcal{X}_3\,\dagger - 2\,\mathcal{E}^5\,p^3\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_4 + 4\,\mathcal{E}^3\,p^5\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_4 - 2\,\mathcal{E}\,p^7\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_4 + 4\,\mathcal{E}^5\,p^3\,\mathcal{X}_1\,\dagger\,\mathcal{X}_4 - 8\,\mathcal{E}^3\,p^5\,\mathcal{X}_1\,\dagger\,\mathcal{X}_4 +$$
$$4\,\mathcal{E}\,p^7\,\mathcal{X}_1\,\dagger\,\mathcal{X}_4 - 4\,\mathcal{E}^3\,p^5\,\mathcal{X}_{11}\,\mathcal{X}_4\,\dagger + 4\,\mathcal{E}\,p^7\,\mathcal{X}_{11}\,\mathcal{X}_4\,\dagger + 8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{16}\,\mathcal{X}_4\,\dagger - 16\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{16}\,\mathcal{X}_4\,\dagger +$$
$$8\,i\,\mathcal{E}^2\,p^6\,\mathcal{X}_{16}\,\mathcal{X}_4\,\dagger + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{19}\,\mathcal{X}_4\,\dagger - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{19}\,\mathcal{X}_4\,\dagger - 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{23}\,\mathcal{X}_4\,\dagger + 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{23}\,\mathcal{X}_4\,\dagger +$$
$$4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{26}\,\mathcal{X}_4\,\dagger - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{26}\,\mathcal{X}_4\,\dagger - 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{30}\,\mathcal{X}_4\,\dagger + 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{30}\,\mathcal{X}_4\,\dagger + 4\,\mathcal{E}^4\,p^4\,\mathcal{X}_4\,\mathcal{X}_4\,\dagger -$$
$$8\,\mathcal{E}^2\,p^6\,\mathcal{X}_4\,\mathcal{X}_4\,\dagger + 4\,p^8\,\mathcal{X}_4\,\mathcal{X}_4\,\dagger + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_2\,\dagger\,\mathcal{X}_5 - 3\,\mathcal{E}^2\,p^6\,\mathcal{X}_2\,\dagger\,\mathcal{X}_5 - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{13}\,\mathcal{X}_5\,\dagger + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{13}\,\mathcal{X}_5\,\dagger +$$
$$6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{17}\,\mathcal{X}_5\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{17}\,\mathcal{X}_5\,\dagger + 6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{22}\,\mathcal{X}_5\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{22}\,\mathcal{X}_5\,\dagger + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_5\,\mathcal{X}_5\,\dagger + 2\,\mathcal{E}^4\,p^4\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_6 -$$
$$2\,\mathcal{E}^2\,p^6\,\mathcal{X}_{11}\,\dagger\,\mathcal{X}_6 - 4\,\mathcal{E}^4\,p^4\,\mathcal{X}_1\,\dagger\,\mathcal{X}_6 + 4\,\mathcal{E}^2\,p^6\,\mathcal{X}_1\,\dagger\,\mathcal{X}_6 - 4\,\mathcal{E}^3\,p^5\,\mathcal{X}_4\,\dagger\,\mathcal{X}_6 + 4\,\mathcal{E}\,p^7\,\mathcal{X}_4\,\dagger\,\mathcal{X}_6 + 2\,\mathcal{E}^4\,p^4\,\mathcal{X}_{11}\,\mathcal{X}_6\,\dagger -$$
$$2\,\mathcal{E}^2\,p^6\,\mathcal{X}_{11}\,\mathcal{X}_6\,\dagger - 4\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{16}\,\mathcal{X}_6\,\dagger + 8\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{16}\,\mathcal{X}_6\,\dagger - 4\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{16}\,\mathcal{X}_6\,\dagger - 8\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{19}\,\mathcal{X}_6\,\dagger +$$
$$8\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{19}\,\mathcal{X}_6\,\dagger + 8\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{23}\,\mathcal{X}_6\,\dagger - 8\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{23}\,\mathcal{X}_6\,\dagger + 4\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{26}\,\mathcal{X}_6\,\dagger - 4\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{26}\,\mathcal{X}_6\,\dagger -$$
$$4\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{30}\,\mathcal{X}_6\,\dagger + 4\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{30}\,\mathcal{X}_6\,\dagger - 2\,\mathcal{E}^5\,p^3\,\mathcal{X}_4\,\mathcal{X}_6\,\dagger + 4\,\mathcal{E}^3\,p^5\,\mathcal{X}_4\,\mathcal{X}_6\,\dagger - 2\,\mathcal{E}\,p^7\,\mathcal{X}_4\,\mathcal{X}_6\,\dagger + 2\,\mathcal{E}^4\,p^4\,\mathcal{X}_6\,\mathcal{X}_6\,\dagger -$$
$$2\,\mathcal{E}^2\,p^6\,\mathcal{X}_6\,\mathcal{X}_6\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{20}\,\mathcal{X}_7\,\dagger + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{20}\,\mathcal{X}_7\,\dagger + 6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{24}\,\mathcal{X}_7\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{24}\,\mathcal{X}_7\,\dagger -$$
$$6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{25}\,\mathcal{X}_7\,\dagger + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{25}\,\mathcal{X}_7\,\dagger + 6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{29}\,\mathcal{X}_7\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{29}\,\mathcal{X}_7\,\dagger + 3\,\mathcal{E}^5\,p^3\,\mathcal{X}_2\,\dagger\,\mathcal{X}_8 -$$
$$3\,\mathcal{E}^3\,p^5\,\mathcal{X}_2\,\dagger\,\mathcal{X}_8 + 3\,\mathcal{E}^5\,p^3\,\mathcal{X}_5\,\dagger\,\mathcal{X}_8 - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{13}\,\mathcal{X}_8\,\dagger + 6\,i\,\mathcal{E}^3\,p^5\,\mathcal{X}_{13}\,\mathcal{X}_8\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{17}\,\mathcal{X}_8\,\dagger -$$
$$6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{17}\,\mathcal{X}_8\,\dagger + 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{22}\,\mathcal{X}_8\,\dagger - 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{22}\,\mathcal{X}_8\,\dagger + 3\,\mathcal{E}^3\,p^5\,\mathcal{X}_5\,\mathcal{X}_8\,\dagger + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_8\,\mathcal{X}_8\,\dagger +$$
$$3\,\mathcal{E}^3\,p^5\,\mathcal{X}_{12}\,\dagger\,\mathcal{X}_9 + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_3\,\dagger\,\mathcal{X}_9 - 3\,\mathcal{E}^2\,p^6\,\mathcal{X}_3\,\dagger\,\mathcal{X}_9 + 3\,\mathcal{E}^5\,p^3\,\mathcal{X}_{12}\,\mathcal{X}_9\,\dagger - 6\,i\,\mathcal{E}^6\,p^2\,\mathcal{X}_{14}\,\mathcal{X}_9\,\dagger + 6\,i\,\mathcal{E}^4\,p^4\,\mathcal{X}_{14}\,\mathcal{X}_9\,\dagger +$$
$$6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{18}\,\mathcal{X}_9\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{18}\,\mathcal{X}_9\,\dagger + 6\,i\,\mathcal{E}^7\,p\,\mathcal{X}_{28}\,\mathcal{X}_9\,\dagger - 6\,i\,\mathcal{E}^5\,p^3\,\mathcal{X}_{28}\,\mathcal{X}_9\,\dagger + 3\,\mathcal{E}^4\,p^4\,\mathcal{X}_9\,\mathcal{X}_9\,\dagger\Big),$$

$$\frac{1}{\mathcal{E}^2\,t_{\mathrm{i}}\,(\mathcal{E}^2 - p^2)}\Big(\mathcal{E}^2\,p\,\mathcal{X}_{11}\,\dagger\,\vec{\tau}^{\parallel}_{00} + \mathcal{E}^2\,p\,\mathcal{X}_1\,\dagger\,\vec{\tau}^{\parallel}_{00} + 2\,\mathcal{E}\,p^2\,\mathcal{X}_4\,\dagger\,\vec{\tau}^{\parallel}_{00} + \mathcal{E}^2\,p\,\mathcal{X}_6\,\dagger\,\vec{\tau}^{\parallel}_{00} -$$
$$\mathcal{E}\,p^2\,\mathcal{X}_3\,\dagger\,\vec{\tau}^{\parallel}_{01} - \mathcal{E}\,p^2\,\mathcal{X}_2\,\dagger\,\vec{\tau}^{\parallel}_{02} + \mathcal{E}\,p^2\,\mathcal{X}_{11}\,\dagger\,\vec{\tau}^{\parallel}_{03} + p^3\,\mathcal{X}_4\,\dagger\,\vec{\tau}^{\parallel}_{03} + \mathcal{E}\,p^2\,\mathcal{X}_6\,\dagger\,\vec{\tau}^{\parallel}_{03} +$$
$$\mathcal{E}^2\,p\,\mathcal{X}_{12}\,\dagger\,\vec{\tau}^{\parallel}_{10} - \mathcal{E}^2\,p\,\mathcal{X}_{11}\,\dagger\,\vec{\tau}^{\parallel}_{11} - \mathcal{E}^2\,p\,\mathcal{X}_{10}\,\dagger\,\vec{\tau}^{\parallel}_{12} - \mathcal{E}^2\,p\,\mathcal{X}_9\,\dagger\,\vec{\tau}^{\parallel}_{13} + \mathcal{E}^2\,p\,\mathcal{X}_8\,\dagger\,\vec{\tau}^{\parallel}_{20} -$$
$$\mathcal{E}^2\,p\,\mathcal{X}_7\,\dagger\,\vec{\tau}^{\parallel}_{21} - \mathcal{E}^2\,p\,\mathcal{X}_6\,\dagger\,\vec{\tau}^{\parallel}_{22} - \mathcal{E}^2\,p\,\mathcal{X}_5\,\dagger\,\vec{\tau}^{\parallel}_{23} + \mathcal{E}^2\,p\,\mathcal{X}_4\,\dagger\,\vec{\tau}^{\parallel}_{30} - \mathcal{E}^2\,p\,\mathcal{X}_3\,\dagger\,\vec{\tau}^{\parallel}_{31} -$$
$$\mathcal{E}^2\,p\,\mathcal{X}_2\,\dagger\,\vec{\tau}^{\parallel}_{32} - \mathcal{E}^2\,p\,\mathcal{X}_1\,\dagger\,\vec{\tau}^{\parallel}_{33}\Big),\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0\Big\}\Big\}$$

MasslessPropagatorResidue

$$\Big\{\Big\{\frac{p^2\left(\mathcal{X}_{10} + i\left(2\,\mathcal{X}_{20} - 2\,\mathcal{X}_{24} - 2\,\mathcal{X}_{25} + 2\,\mathcal{X}_{29} + i\,\mathcal{X}_7\right)\right)\left(\mathcal{X}_{10}\,\dagger - i\left(2\,\mathcal{X}_{20}\,\dagger - 2\,\mathcal{X}_{24}\,\dagger - 2\,\mathcal{X}_{25}\,\dagger + 2\,\mathcal{X}_{29}\,\dagger - i\,\mathcal{X}_7\,\dagger\right)\right)}{6\,t_{\mathrm{i}}},$$

$$-\frac{p^2\,(\mathcal{X}_1 + \mathcal{X}_{11} + \mathcal{X}_4 + \mathcal{X}_6)\left(\mathcal{X}_{11}\,\dagger - 2\,i\,\mathcal{X}_{19}\,\dagger + 2\,i\,\mathcal{X}_{23}\,\dagger - 2\,i\,\mathcal{X}_{26}\,\dagger + 2\,i\,\mathcal{X}_{30}\,\dagger + \mathcal{X}_6\,\dagger\right)}{12\,t_{\mathrm{i}}},$$

$$-\frac{p^2\left(\mathcal{X}_{11} + 2\,i\,\mathcal{X}_{19} - 2\,i\,\mathcal{X}_{23} + 2\,i\,\mathcal{X}_{26} - 2\,i\,\mathcal{X}_{30} + \mathcal{X}_6\right)\left(\mathcal{X}_{11}\,\dagger + \mathcal{X}_1\,\dagger + \mathcal{X}_4\,\dagger + \mathcal{X}_6\,\dagger\right)}{12\,t_{\mathrm{i}}},$$

$$\frac{p^2\,(\mathcal{X}_1 + \mathcal{X}_{11} + \mathcal{X}_4 + \mathcal{X}_6)\left(\mathcal{X}_{11}\,\dagger + \mathcal{X}_1\,\dagger + \mathcal{X}_4\,\dagger + \mathcal{X}_6\,\dagger\right)}{24\,t_{\mathrm{i}}},$$

$$-\frac{p^2\,(\mathcal{X}_1 + \mathcal{X}_{11} + \mathcal{X}_4 + \mathcal{X}_6)\left(\mathcal{X}_{11}\,\dagger - 2\,i\,\mathcal{X}_{19}\,\dagger + 2\,i\,\mathcal{X}_{23}\,\dagger - 2\,i\,\mathcal{X}_{26}\,\dagger + 2\,i\,\mathcal{X}_{30}\,\dagger + \mathcal{X}_6\,\dagger\right)}{4\,t_{\mathrm{i}}},$$

$$\frac{p^2 (\chi_1 + \chi_{11} + \chi_4 + \chi_6) \left(\chi_{11} \dagger + \chi_1 \dagger + \chi_4 \dagger + \chi_6 \dagger\right)}{8 t_1},$$

$$-\frac{p^2 \left(\chi_{11} + 2 i \chi_{19} - 2 i \chi_{23} + 2 i \chi_{26} - 2 i \chi_{30} + \chi_6\right) \left(\chi_{11} \dagger + \chi_1 \dagger + \chi_4 \dagger + \chi_6 \dagger\right)}{4 t_1},$$

$$\frac{p^2 (\chi_1 + \chi_{11} + \chi_4 + \chi_6) \left(\chi_{11} \dagger + \chi_1 \dagger + \chi_4 \dagger + \chi_6 \dagger\right)}{8 t_1},$$

$$\frac{3 p^2 (\chi_1 + \chi_{11} + \chi_4 + \chi_6) \left(\chi_{11} \dagger + \chi_1 \dagger + \chi_4 \dagger + \chi_6 \dagger\right)}{8 t_1}, 0, 0, 0, 0, 0, 0, 0\Big\},$$

$$\Big\{\frac{1}{4 t_1} p^2 \Big(-4 i \chi_{11} \left(\chi_{19} \dagger - \chi_{23} \dagger + \chi_{26} \dagger - \chi_{30} \dagger\right) - 4 i \chi_{13} \dagger \chi_5 + 4 i \chi_{17} \dagger \chi_5 + 4 i \chi_{27} \dagger \chi_5 + 2 \chi_2 \dagger \chi_5 +$$
$$\chi_5 \chi_5 \dagger + 4 p^2 \chi_5 \chi_5 \dagger - 4 i \chi_{19} \dagger \chi_6 + 4 i \chi_{23} \dagger \chi_6 - 4 i \chi_{26} \dagger \chi_6 + 4 i \chi_{30} \dagger \chi_6 - 4 i \chi_{13} \dagger \chi_8 +$$
$$4 i \chi_{17} \dagger \chi_8 + 4 i \chi_{27} \dagger \chi_8 + 2 \chi_2 \dagger \chi_8 + 4 p^2 \chi_5 \dagger \chi_8 + 2 \chi_5 \chi_8 \dagger + 4 p^2 \chi_5 \chi_8 \dagger + \chi_8 \chi_8 \dagger + 4 p^2 \chi_8 \chi_8 \dagger +$$
$$2 \chi_{12} \dagger \chi_9 + 4 p^2 \chi_{12} \dagger \chi_9 - 4 i \chi_{14} \dagger \chi_9 + 4 i \chi_{18} \dagger \chi_9 - 4 i \chi_{21} \dagger \chi_9 + 2 \chi_3 \dagger \chi_9 + \chi_9 \chi_9 \dagger +$$
$$4 p^2 \chi_9 \chi_9 \dagger + \chi_{12} \left(\chi_{12} \dagger + 4 p^2 \chi_{12} \dagger - 4 i \chi_{14} \dagger + 4 i \chi_{18} \dagger - 4 i \chi_{21} \dagger + 2 \chi_3 \dagger + 4 p^2 \chi_9 \dagger\right)\Big), \frac{1}{4 t_1}$$
$$p^2 \Big(4 i \chi_{11} \dagger \chi_{19} - 4 i \chi_{11} \dagger \chi_{23} + 4 i \chi_{11} \dagger \chi_{26} - 4 i \chi_{11} \dagger \chi_{30} + 4 i \chi_{13} \chi_5 \dagger - 4 i \chi_{17} \chi_5 \dagger + 2 \chi_2 \chi_5 \dagger -$$
$$4 i \chi_{27} \chi_5 \dagger + \chi_5 \chi_5 \dagger + 4 p^2 \chi_5 \chi_5 \dagger + 4 i \chi_{19} \chi_6 \dagger - 4 i \chi_{23} \chi_6 \dagger + 4 i \chi_{26} \chi_6 \dagger - 4 i \chi_{30} \chi_6 \dagger +$$
$$2 \chi_5 \dagger \chi_8 + 4 p^2 \chi_5 \dagger \chi_8 + 4 i \chi_{13} \chi_8 \dagger - 4 i \chi_{17} \chi_8 \dagger + 2 \chi_2 \chi_8 \dagger - 4 i \chi_{27} \chi_8 \dagger + 4 p^2 \chi_5 \chi_8 \dagger +$$
$$\chi_8 \chi_8 \dagger + 4 p^2 \chi_8 \chi_8 \dagger + 2 \chi_{12} \dagger \left(2 i \chi_{14} - 2 i \chi_{18} + 2 i \chi_{21} + \chi_3 + 2 p^2 \chi_9\right) + 4 i \chi_{14} \chi_9 \dagger - 4 i \chi_{18} \chi_9 \dagger +$$
$$4 i \chi_{21} \chi_9 \dagger + 2 \chi_3 \chi_9 \dagger + \chi_9 \chi_9 \dagger + 4 p^2 \chi_9 \chi_9 \dagger + \chi_{12} \left(\chi_{12} \dagger + 4 p^2 \chi_{12} \dagger + 2 \chi_9 \dagger + 4 p^2 \chi_9 \dagger\right)\Big), \frac{1}{4 t_1}$$
$$p^2 \Big(\chi_5 \chi_5 \dagger + 8 p^2 \chi_5 \chi_5 \dagger - 2 \chi_{11} \dagger \chi_6 - 2 \chi_6 \chi_6 \dagger - 2 \chi_{11} \left(\chi_{11} \dagger + \chi_6 \dagger\right) + 8 p^2 \chi_5 \dagger \chi_8 + 8 p^2 \chi_5 \chi_8 \dagger -$$
$$\chi_8 \chi_8 \dagger + 8 p^2 \chi_8 \chi_8 \dagger + 8 p^2 \chi_{12} \dagger \chi_9 + \chi_9 \chi_9 \dagger + 8 p^2 \chi_9 \chi_9 \dagger + \chi_{12} \left(-\chi_{12} \dagger + 8 p^2 \chi_{12} \dagger + 8 p^2 \chi_9 \dagger\right)\Big),$$
$$-\frac{1}{4 t_1} p^2 \Big(-4 i \chi_{10} \left(\chi_{20} \dagger - \chi_{24} \dagger - \chi_{25} \dagger + \chi_{29} \dagger\right) + 2 \chi_{12} \dagger \chi_3 - 4 i \chi_{13} \dagger \chi_5 + 4 i \chi_{17} \dagger \chi_5 - 4 i \chi_{22} \dagger \chi_5 +$$
$$2 \chi_2 \chi_5 \dagger + \chi_5 \chi_5 \dagger + 2 p^2 \chi_5 \chi_5 \dagger + 4 i \chi_{20} \dagger \chi_7 - 4 i \chi_{24} \dagger \chi_7 - 4 i \chi_{25} \dagger \chi_7 + 4 i \chi_{29} \dagger \chi_7 -$$
$$4 i \chi_{13} \dagger \chi_8 + 4 i \chi_{17} \dagger \chi_8 - 4 i \chi_{22} \dagger \chi_8 + 2 \chi_5 \dagger \chi_8 + 2 p^2 \chi_5 \dagger \chi_8 + 2 \chi_2 \chi_8 \dagger + 2 p^2 \chi_5 \chi_8 \dagger +$$
$$\chi_8 \chi_8 \dagger + 2 p^2 \chi_8 \chi_8 \dagger + 2 p^2 \chi_{12} \dagger \chi_9 - 4 i \chi_{14} \dagger \chi_9 + 4 i \chi_{18} \dagger \chi_9 - 4 i \chi_{28} \dagger \chi_9 + 2 \chi_3 \chi_9 \dagger + \chi_9 \chi_9 \dagger +$$
$$2 p^2 \chi_9 \chi_9 \dagger + \chi_{12} \left(\chi_{12} \dagger + 2 p^2 \chi_{12} \dagger + 2 \left(-2 i \chi_{14} \dagger + 2 i \chi_{18} \dagger - 2 i \chi_{28} \dagger + \chi_9 \dagger + p^2 \chi_9 \dagger\right)\right)\Big),$$
$$-\frac{1}{4 t_1} p^2 \Big(4 i \chi_{10} \dagger \chi_{20} - 4 i \chi_{10} \dagger \chi_{24} - 4 i \chi_{10} \dagger \chi_{25} + 4 i \chi_{10} \dagger \chi_{29} + 2 \chi_2 \dagger \chi_5 + 4 i \chi_{13} \chi_5 \dagger - 4 i \chi_{17} \chi_5 \dagger +$$
$$4 i \chi_{22} \chi_5 \dagger + \chi_5 \chi_5 \dagger + 2 p^2 \chi_5 \chi_5 \dagger - 4 i \chi_{20} \chi_7 \dagger + 4 i \chi_{24} \chi_7 \dagger + 4 i \chi_{25} \chi_7 \dagger - 4 i \chi_{29} \chi_7 \dagger +$$
$$2 \chi_2 \dagger \chi_8 + 2 p^2 \chi_5 \dagger \chi_8 + 4 i \chi_{13} \chi_8 \dagger - 4 i \chi_{17} \chi_8 \dagger + 4 i \chi_{22} \chi_8 \dagger + 2 \chi_5 \chi_8 \dagger + 2 p^2 \chi_5 \chi_8 \dagger +$$
$$\chi_8 \chi_8 \dagger + 2 p^2 \chi_8 \chi_8 \dagger + 2 \chi_3 \dagger \chi_9 + 2 \chi_{12} \dagger \left(2 i \chi_{14} - 2 i \chi_{18} + 2 i \chi_{28} + \chi_9 + p^2 \chi_9\right) + 4 i \chi_{14} \chi_9 \dagger -$$

$$4\,i\,\chi_{18}\,\chi_{9}{\dagger} + 4\,i\,\chi_{28}\,\chi_{9}{\dagger} + \chi_{9}\,\chi_{9}{\dagger} + 2\,p^{2}\,\chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + 2\,p^{2}\,\chi_{12}{\dagger} + 2\left(\chi_{3}{\dagger} + p^{2}\,\chi_{9}{\dagger}\right)\right)\Big)\Big),$$

$$-\frac{1}{4\,t_{1}}\,p^{2}\Big(2\,\chi_{12}{\dagger}\,\chi_{3} + 2\,\chi_{2}{\dagger}\,\chi_{5} + 2\,\chi_{2}\,\chi_{5}{\dagger} - \chi_{5}\,\chi_{5}{\dagger} + 4\,p^{2}\,\chi_{5}\,\chi_{5}{\dagger} + 2\,\chi_{10}{\dagger}\,\chi_{7} - 2\,\chi_{10}\left(\chi_{10}{\dagger} - \chi_{7}{\dagger}\right) -$$
$$2\,\chi_{7}\,\chi_{7}{\dagger} + 2\,\chi_{2}{\dagger}\,\chi_{8} + 4\,p^{2}\,\chi_{5}{\dagger}\,\chi_{8} + 2\,\chi_{2}\,\chi_{8}{\dagger} + 4\,p^{2}\,\chi_{5}\,\chi_{8}{\dagger} + \chi_{8}\,\chi_{8}{\dagger} + 4\,p^{2}\,\chi_{8}\,\chi_{8}{\dagger} + 4\,p^{2}\,\chi_{12}{\dagger}\,\chi_{9} +$$
$$2\,\chi_{3}{\dagger}\,\chi_{9} + 2\,\chi_{3}\,\chi_{9}{\dagger} - \chi_{9}\,\chi_{9}{\dagger} + 4\,p^{2}\,\chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + 4\,p^{2}\,\chi_{12}{\dagger} + 2\,\chi_{3}{\dagger} + 4\,p^{2}\,\chi_{9}{\dagger}\right)\Big),$$

$$\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{2\,t_{1}},$$

$$\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{2\,t_{1}},$$

$$\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{2\,t_{1}},$$

$$\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{2\,t_{1}}, 0,$$

$$-\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{t_{1}},$$

$$-\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{t_{1}},$$

$$-\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{t_{1}},$$

$$-\frac{p^{4}\left(\chi_{5}{\dagger}\,\chi_{8} + \chi_{8}\,\chi_{8}{\dagger} + \chi_{5}\left(\chi_{5}{\dagger} + \chi_{8}{\dagger}\right) + \chi_{12}{\dagger}\,\chi_{9} + \chi_{9}\,\chi_{9}{\dagger} + \chi_{12}\left(\chi_{12}{\dagger} + \chi_{9}{\dagger}\right)\right)}{t_{1}}, 0\Big\},$$

$$\Big\{\frac{1}{12\,t_{1}}\,p^{2}\Big(9\,\chi_{12}\,\chi_{12}{\dagger} + 12\,i\,\chi_{12}{\dagger}\,\chi_{14} - 12\,i\,\chi_{12}{\dagger}\,\chi_{18} - 24\,\chi_{19}\,\chi_{19}{\dagger} + 8\,i\,\chi_{10}{\dagger}\,\chi_{20} - 32\,\chi_{20}\,\chi_{20}{\dagger} - 12\,i\,\chi_{12}{\dagger}\,\chi_{21} +$$
$$24\,\chi_{19}{\dagger}\,\chi_{23} + 24\,\chi_{19}\,\chi_{23}{\dagger} - 24\,\chi_{23}\,\chi_{23}{\dagger} - 8\,i\,\chi_{10}{\dagger}\,\chi_{24} + 32\,\chi_{20}{\dagger}\,\chi_{24} + 32\,\chi_{20}\,\chi_{24}{\dagger} - 32\,\chi_{24}\,\chi_{24}{\dagger} -$$
$$8\,i\,\chi_{10}{\dagger}\,\chi_{25} - 16\,\chi_{20}{\dagger}\,\chi_{25} + 16\,\chi_{24}{\dagger}\,\chi_{25} - 16\,\chi_{20}\,\chi_{25}{\dagger} + 16\,\chi_{24}\,\chi_{25}{\dagger} - 32\,\chi_{25}\,\chi_{25}{\dagger} + 24\,\chi_{19}{\dagger}\,\chi_{26} -$$
$$24\,\chi_{23}{\dagger}\,\chi_{26} + 24\,\chi_{19}\,\chi_{26}{\dagger} - 24\,\chi_{23}\,\chi_{26}{\dagger} - 24\,\chi_{26}\,\chi_{26}{\dagger} + 8\,i\,\chi_{10}{\dagger}\,\chi_{29} + 16\,\chi_{20}{\dagger}\,\chi_{29} - 16\,\chi_{24}{\dagger}\,\chi_{29} +$$
$$32\,\chi_{25}{\dagger}\,\chi_{29} + 16\,\chi_{20}\,\chi_{29}{\dagger} - 16\,\chi_{24}\,\chi_{29}{\dagger} + 32\,\chi_{25}\,\chi_{29}{\dagger} - 32\,\chi_{29}\,\chi_{29}{\dagger} + 6\,\chi_{12}{\dagger}\,\chi_{3} - 24\,\chi_{19}{\dagger}\,\chi_{30} + 24\,\chi_{23}{\dagger}\,\chi_{30} +$$
$$24\,\chi_{26}{\dagger}\,\chi_{30} - 24\,\chi_{19}\,\chi_{30}{\dagger} + 24\,\chi_{23}\,\chi_{30}{\dagger} + 24\,\chi_{26}\,\chi_{30}{\dagger} - 24\,\chi_{30}\,\chi_{30}{\dagger} - 12\,i\,\chi_{13}{\dagger}\,\chi_{5} + 12\,i\,\chi_{17}{\dagger}\,\chi_{5} -$$
$$12\,i\,\chi_{27}{\dagger}\,\chi_{5} + 6\,\chi_{2}{\dagger}\,\chi_{5} + 12\,i\,\chi_{13}\,\chi_{5}{\dagger} - 12\,i\,\chi_{17}\,\chi_{5}{\dagger} + 6\,\chi_{2}\,\chi_{5}{\dagger} + 12\,i\,\chi_{27}\,\chi_{5}{\dagger} + 3\,\chi_{5}\,\chi_{5}{\dagger} + 8\,\chi_{10}{\dagger}\,\chi_{7} +$$
$$8\,i\,\chi_{20}{\dagger}\,\chi_{7} - 8\,i\,\chi_{24}{\dagger}\,\chi_{7} - 8\,i\,\chi_{25}{\dagger}\,\chi_{7} + 8\,i\,\chi_{29}{\dagger}\,\chi_{7} - 8\,\chi_{10}\left(\chi_{10}{\dagger} + i\left(\chi_{20}{\dagger} - \chi_{24}{\dagger} - \chi_{25}{\dagger} + \chi_{29}{\dagger} + i\,\chi_{7}{\dagger}\right)\right) -$$
$$8\,i\,\chi_{20}\,\chi_{7}{\dagger} + 8\,i\,\chi_{24}\,\chi_{7}{\dagger} + 8\,i\,\chi_{25}\,\chi_{7}{\dagger} - 8\,i\,\chi_{29}\,\chi_{7}{\dagger} - 8\,\chi_{7}\,\chi_{7}{\dagger} - 12\,i\,\chi_{13}{\dagger}\,\chi_{8} + 12\,i\,\chi_{17}{\dagger}\,\chi_{8} - 12\,i\,\chi_{27}{\dagger}\,\chi_{8} +$$
$$6\,\chi_{2}{\dagger}\,\chi_{8} + 6\,\chi_{5}{\dagger}\,\chi_{8} + 12\,i\,\chi_{13}\,\chi_{8}{\dagger} - 12\,i\,\chi_{17}\,\chi_{8}{\dagger} + 6\,\chi_{2}\,\chi_{8}{\dagger} + 12\,i\,\chi_{27}\,\chi_{8}{\dagger} + 6\,\chi_{5}\,\chi_{8}{\dagger} + 9\,\chi_{8}\,\chi_{8}{\dagger} +$$
$$6\,\chi_{12}{\dagger}\,\chi_{9} - 12\,i\,\chi_{14}{\dagger}\,\chi_{9} + 12\,i\,\chi_{18}{\dagger}\,\chi_{9} + 12\,i\,\chi_{21}{\dagger}\,\chi_{9} + 6\,\chi_{3}{\dagger}\,\chi_{9} + 12\,i\,\chi_{14}\,\chi_{9}{\dagger} - 12\,i\,\chi_{18}\,\chi_{9}{\dagger} -$$

$$12\,i\,\mathcal{X}_{21}\,\mathcal{X}_9\,\dagger + 6\,\mathcal{X}_3\,\mathcal{X}_9\,\dagger + 3\,\mathcal{X}_9\,\mathcal{X}_9\,\dagger + 6\,\mathcal{X}_{12}\left(-2\,i\,\mathcal{X}_{14}\,\dagger + 2\,i\,\mathcal{X}_{18}\,\dagger + 2\,i\,\mathcal{X}_{21}\,\dagger + \mathcal{X}_3\,\dagger + \mathcal{X}_9\,\dagger\right)\Big),\ \frac{1}{t_1}$$

$$p\Big(\left(\mathcal{X}_{11}\,\dagger - 2\,i\,\mathcal{X}_{16}\,\dagger + \mathcal{X}_6\,\dagger\right)\,{}^{2^+}\tau^{\parallel}_{00} - \left(\mathcal{X}_{12}\,\dagger - 2\,i\,\mathcal{X}_{14}\,\dagger + 2\,i\,\mathcal{X}_{18}\,\dagger + \mathcal{X}_9\,\dagger\right)\,{}^{2^+}\tau^{\parallel}_{01} + i\left(2\,\mathcal{X}_{13}\,\dagger - 2\,\mathcal{X}_{17}\,\dagger + i\left(\mathcal{X}_5\,\dagger + \mathcal{X}_8\,\dagger\right)\right)$$
$${}^{2^+}\tau^{\parallel}_{02} + \left(\mathcal{X}_{11}\,\dagger - 2\,i\,\mathcal{X}_{16}\,\dagger + \mathcal{X}_6\,\dagger\right)\,{}^{2^+}\tau^{\parallel}_{03} - 2\,i\left(\mathcal{X}_{28}\,\dagger\,{}^{2^+}\tau^{\parallel}_{10} + \left(-\mathcal{X}_{26}\,\dagger + \mathcal{X}_{30}\,\dagger\right)\,{}^{2^+}\tau^{\parallel}_{11} - \mathcal{X}_{25}\,\dagger\,{}^{2^+}\tau^{\parallel}_{12} +$$
$$\mathcal{X}_{29}\,\dagger\,{}^{2^+}\tau^{\parallel}_{12} + \mathcal{X}_{28}\,\dagger\,{}^{2^+}\tau^{\parallel}_{13} + \mathcal{X}_{22}\,\dagger\,{}^{2^+}\tau^{\parallel}_{20} - \mathcal{X}_{20}\,\dagger\,{}^{2^+}\tau^{\parallel}_{21} + \mathcal{X}_{24}\,\dagger\,{}^{2^+}\tau^{\parallel}_{21} - \mathcal{X}_{19}\,\dagger\,{}^{2^+}\tau^{\parallel}_{22} + \mathcal{X}_{23}\,\dagger\,{}^{2^+}\tau^{\parallel}_{22} +$$
$$\mathcal{X}_{22}\,\dagger\,{}^{2^+}\tau^{\parallel}_{23} + \mathcal{X}_{16}\,\dagger\,{}^{2^+}\tau^{\parallel}_{30} - \mathcal{X}_{14}\,\dagger\,{}^{2^+}\tau^{\parallel}_{31} + \mathcal{X}_{18}\,\dagger\,{}^{2^+}\tau^{\parallel}_{31} - \mathcal{X}_{13}\,\dagger\,{}^{2^+}\tau^{\parallel}_{32} + \mathcal{X}_{17}\,\dagger\,{}^{2^+}\tau^{\parallel}_{32} + \mathcal{X}_{16}\,\dagger\,{}^{2^+}\tau^{\parallel}_{33}\Big)\Big),$$

$$\frac{1}{12\,t_1}p^2\left(-3\,\mathcal{X}_{12}\left(\mathcal{X}_{12}\,\dagger - 2\,\mathcal{X}_3\,\dagger\right) + 4\,\mathcal{X}_{11}\left(\mathcal{X}_{11}\,\dagger - 2\,\mathcal{X}_1\,\dagger - 2\,\mathcal{X}_4\,\dagger + \mathcal{X}_6\,\dagger\right) -\right.$$
$$i\left(-8\,\mathcal{X}_{19}\,\mathcal{X}_1\,\dagger + 12\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{20} + 8\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{23} - 12\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{24} + 12\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{25} - 8\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{26} - 12\,\mathcal{X}_{10}\,\dagger\,\mathcal{X}_{29} +\right.$$
$$8\,\mathcal{X}_1\,\dagger\,\mathcal{X}_{30} - 8\,\mathcal{X}_{19}\,\mathcal{X}_4\,\dagger + 8\,\mathcal{X}_{23}\,\mathcal{X}_4\,\dagger - 8\,\mathcal{X}_{26}\,\mathcal{X}_4\,\dagger + 8\,\mathcal{X}_{30}\,\mathcal{X}_4\,\dagger + 6\,i\,\mathcal{X}_2\,\dagger\,\mathcal{X}_5 + 12\,\mathcal{X}_{13}\,\mathcal{X}_5\,\dagger - 12\,\mathcal{X}_{17}\,\mathcal{X}_5\,\dagger -$$
$$12\,\mathcal{X}_{22}\,\mathcal{X}_5\,\dagger - 3\,i\,\mathcal{X}_5\,\mathcal{X}_5\,\dagger + \mathcal{X}_{11}\,\dagger\left(-8\,\mathcal{X}_{19} + 8\,\mathcal{X}_{23} + 16\,\mathcal{X}_{26} - 16\,\mathcal{X}_{30} + 4\,i\,\mathcal{X}_6\right) - 8\,i\,\mathcal{X}_1\,\dagger\,\mathcal{X}_6 - 8\,i\,\mathcal{X}_4\,\dagger\,\mathcal{X}_6 +$$
$$16\,\mathcal{X}_{19}\,\mathcal{X}_6\,\dagger - 16\,\mathcal{X}_{23}\,\mathcal{X}_6\,\dagger - 8\,\mathcal{X}_{26}\,\mathcal{X}_6\,\dagger + 8\,\mathcal{X}_{30}\,\mathcal{X}_6\,\dagger + 4\,i\,\mathcal{X}_6\,\mathcal{X}_6\,\dagger + 12\,\mathcal{X}_{20}\,\mathcal{X}_7\,\dagger - 12\,\mathcal{X}_{24}\,\mathcal{X}_7\,\dagger + 12\,\mathcal{X}_{25}\,\mathcal{X}_7\,\dagger -$$
$$12\,\mathcal{X}_{29}\,\mathcal{X}_7\,\dagger + 6\,i\,\mathcal{X}_2\,\dagger\,\mathcal{X}_8 + 12\,\mathcal{X}_{13}\,\mathcal{X}_8\,\dagger - 12\,\mathcal{X}_{17}\,\mathcal{X}_8\,\dagger - 12\,\mathcal{X}_{22}\,\mathcal{X}_8\,\dagger - 6\,i\,\mathcal{X}_5\,\mathcal{X}_8\,\dagger - 3\,i\,\mathcal{X}_8\,\mathcal{X}_8\,\dagger +$$
$$\left.\left.6\,\mathcal{X}_{12}\,\dagger\left(2\,\mathcal{X}_{14} - 2\,\mathcal{X}_{18} - 2\,\mathcal{X}_{28} - i\,\mathcal{X}_9\right) + 6\,i\,\mathcal{X}_3\,\dagger\,\mathcal{X}_9 + 12\,\mathcal{X}_{14}\,\mathcal{X}_9\,\dagger - 12\,\mathcal{X}_{18}\,\mathcal{X}_9\,\dagger - 12\,\mathcal{X}_{28}\,\mathcal{X}_9\,\dagger - 3\,i\,\mathcal{X}_9\,\mathcal{X}_9\,\dagger\right)\right),$$

$$\frac{1}{t_1}p\Big(\left(\mathcal{X}_{11}\,\dagger + \mathcal{X}_1\,\dagger + 2\,\mathcal{X}_4\,\dagger + \mathcal{X}_6\,\dagger\right)\,{}^{2^+}\tau^{\parallel}_{00} - \mathcal{X}_3\,\dagger\,{}^{2^+}\tau^{\parallel}_{01} - \mathcal{X}_2\,\dagger\,{}^{2^+}\tau^{\parallel}_{02} + \mathcal{X}_{11}\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} + \mathcal{X}_4\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} +$$
$$\mathcal{X}_6\,\dagger\,{}^{2^+}\tau^{\parallel}_{03} + \mathcal{X}_{12}\,\dagger\,{}^{2^+}\tau^{\parallel}_{10} - \mathcal{X}_{11}\,\dagger\,{}^{2^+}\tau^{\parallel}_{11} - \mathcal{X}_{10}\,\dagger\,{}^{2^+}\tau^{\parallel}_{12} - \mathcal{X}_9\,\dagger\,{}^{2^+}\tau^{\parallel}_{13} + \mathcal{X}_8\,\dagger\,{}^{2^+}\tau^{\parallel}_{20} - \mathcal{X}_7\,\dagger\,{}^{2^+}\tau^{\parallel}_{21} - \mathcal{X}_6\,\dagger\,{}^{2^+}\tau^{\parallel}_{22} -$$
$$\mathcal{X}_5\,\dagger\,{}^{2^+}\tau^{\parallel}_{23} + \mathcal{X}_4\,\dagger\,{}^{2^+}\tau^{\parallel}_{30} - \mathcal{X}_3\,\dagger\,{}^{2^+}\tau^{\parallel}_{31} - \mathcal{X}_2\,\dagger\,{}^{2^+}\tau^{\parallel}_{32} - \mathcal{X}_1\,\dagger\,{}^{2^+}\tau^{\parallel}_{33}\Big),\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0,\ 0\Big\}\Big\}$$

MasslessAnalysis

$$\left\{\frac{1}{6\,t_1}\right.$$

$$p\,(2\,p\,\chi_1\,\chi_{11}\dagger - p\,\chi_{11}\,\chi_{11}\dagger - 6\,i\,p\,\chi_{12}\,\chi_{14}\dagger + 6\,i\,p\,\chi_{12}\,\chi_{18}\dagger + 6\,i\,p\,\chi_{11}\dagger\chi_{19} + 4\,i\,p\,\chi_1\,\chi_{19}\dagger - 2\,i\,p\,\chi_{11}\,\chi_{19}\dagger - 12\,p\,\chi_{19}$$
$$\chi_{19}\dagger + 4\,p\,\chi_1\,\chi_1\dagger - 2\,p\,\chi_{11}\,\chi_1\dagger - 6\,i\,p\,\chi_{10}\dagger\chi_{20} - 12\,p\,\chi_{20}\,\chi_{20}\dagger - 6\,i\,p\,\chi_{11}\dagger\chi_{23} + 12\,p\,\chi_{19}\dagger\chi_{23} - 4\,i\,p\,\chi_1\,\chi_{23}\dagger +$$
$$2\,i\,p\,\chi_{11}\,\chi_{23}\dagger + 12\,p\,\chi_{19}\,\chi_{23}\dagger - 12\,p\,\chi_{23}\,\chi_{23}\dagger + 6\,i\,p\,\chi_{10}\dagger\chi_{24} + 12\,p\,\chi_{20}\dagger\chi_{24} + 12\,p\,\chi_{20}\,\chi_{24}\dagger - 12\,p\,\chi_{24}\,\chi_{24}\dagger -$$
$$6\,i\,p\,\chi_{10}\dagger\chi_{25} - 12\,p\,\chi_{20}\dagger\chi_{25} + 12\,p\,\chi_{24}\dagger\chi_{25} - 12\,p\,\chi_{20}\,\chi_{25}\dagger + 12\,p\,\chi_{24}\,\chi_{25}\dagger - 12\,p\,\chi_{25}\,\chi_{25}\dagger - 6\,i\,p\,\chi_{11}\dagger\chi_{26} +$$
$$12\,p\,\chi_{19}\dagger\chi_{26} - 12\,p\,\chi_{23}\dagger\chi_{26} + 4\,i\,p\,\chi_1\,\chi_{26}\dagger - 2\,i\,p\,\chi_{11}\,\chi_{26}\dagger + 12\,p\,\chi_{19}\,\chi_{26}\dagger - 12\,p\,\chi_{23}\,\chi_{26}\dagger - 12\,p\,\chi_{26}\,\chi_{26}\dagger +$$
$$6\,i\,p\,\chi_{12}\,\chi_{28}\dagger + 6\,i\,p\,\chi_{10}\dagger\chi_{29} + 12\,p\,\chi_{20}\dagger\chi_{29} - 12\,p\,\chi_{24}\dagger\chi_{29} + 12\,p\,\chi_{25}\dagger\chi_{29} + 12\,p\,\chi_{20}\,\chi_{29}\dagger - 12\,p\,\chi_{24}\,\chi_{29}\dagger +$$
$$12\,p\,\chi_{25}\,\chi_{29}\dagger - 12\,p\,\chi_{29}\,\chi_{29}\dagger + 6\,i\,p\,\chi_{11}\dagger\chi_{30} - 12\,p\,\chi_{19}\dagger\chi_{30} + 12\,p\,\chi_{23}\dagger\chi_{30} + 12\,p\,\chi_{26}\dagger\chi_{30} -$$
$$4\,i\,p\,\chi_1\,\chi_{30}\dagger + 2\,i\,p\,\chi_{11}\,\chi_{30}\dagger - 12\,p\,\chi_{19}\,\chi_{30}\dagger + 12\,p\,\chi_{23}\,\chi_{30}\dagger + 12\,p\,\chi_{26}\,\chi_{30}\dagger - 12\,p\,\chi_{30}\,\chi_{30}\dagger + 3\,p\,\chi_{12}\,\chi_3\dagger +$$
$$2\,p\,\chi_{11}\dagger\chi_4 + 4\,i\,p\,\chi_{19}\dagger\chi_4 + 4\,p\,\chi_1\dagger\chi_4 - 4\,i\,p\,\chi_{23}\dagger\chi_4 + 4\,i\,p\,\chi_{26}\dagger\chi_4 - 4\,i\,p\,\chi_{30}\dagger\chi_4 + 4\,p\,\chi_1\,\chi_4\dagger -$$
$$2\,p\,\chi_{11}\,\chi_4\dagger + 4\,p\,\chi_4\,\chi_4\dagger - 6\,i\,p\,\chi_{13}\dagger\chi_5 + 6\,i\,p\,\chi_{17}\dagger\chi_5 + 6\,i\,p\,\chi_{22}\dagger\chi_5 + 3\,p\,\chi_2\dagger\chi_5 + 3\,p\,\chi_5\,\chi_5\dagger - p\,\chi_{11}\dagger\chi_6 -$$
$$2\,i\,p\,\chi_{19}\dagger\chi_6 - 2\,p\,\chi_1\dagger\chi_6 + 2\,i\,p\,\chi_{23}\dagger\chi_6 - 2\,i\,p\,\chi_{26}\dagger\chi_6 + 2\,i\,p\,\chi_{30}\dagger\chi_6 - 2\,p\,\chi_4\dagger\chi_6 + 2\,p\,\chi_1\,\chi_6\dagger - p\,\chi_{11}\,\chi_6\dagger -$$
$$6\,i\,p\,\chi_{19}\,\chi_6\dagger + 6\,i\,p\,\chi_{23}\,\chi_6\dagger + 6\,i\,p\,\chi_{26}\,\chi_6\dagger - 6\,i\,p\,\chi_{30}\,\chi_6\dagger + 2\,p\,\chi_4\,\chi_6\dagger - p\,\chi_6\,\chi_6\dagger - 6\,i\,p\,\chi_{20}\,\chi_7\dagger +$$
$$6\,i\,p\,\chi_{24}\,\chi_7\dagger - 6\,i\,p\,\chi_{25}\,\chi_7\dagger + 6\,i\,p\,\chi_{29}\,\chi_7\dagger - 6\,i\,p\,\chi_{13}\dagger\chi_8 + 6\,i\,p\,\chi_{17}\dagger\chi_8 + 6\,i\,p\,\chi_{22}\dagger\chi_8 + 3\,p\,\chi_2\dagger\chi_8 +$$
$$3\,p\,\chi_5\dagger\chi_8 - 6\,i\,p\,\chi_{14}\dagger\chi_9 + 6\,i\,p\,\chi_{18}\dagger\chi_9 + 6\,i\,p\,\chi_{28}\dagger\chi_9 + 3\,p\,\chi_3\dagger\chi_9 + 3\,p\,\chi_{12}\,\chi_9\dagger + 3\,p\,\chi_9\,\chi_9\dagger +$$
$$6\,(2\,\chi_{11}\dagger - 2\,i\,\chi_{16}\dagger + \chi_1\dagger + 2\,\chi_4\dagger + 2\,\chi_6\dagger)\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{00} - 6\,(\chi_{12}\dagger - 2\,i\,\chi_{14}\dagger + 2\,i\,\chi_{18}\dagger + \chi_3\dagger + \chi_9\dagger)\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{01} +$$
$$12\,i\,\chi_{13}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{02} - 12\,i\,\chi_{17}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{02} - 6\,\chi_2\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{02} - 6\,\chi_5\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{02} - 6\,\chi_8\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{02} + 12\,\chi_{11}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{03} -$$
$$12\,i\,\chi_{16}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{03} + 6\,\chi_4\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{03} + 12\,\chi_6\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{03} + 6\,\chi_{12}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{10} - 12\,i\,\chi_{28}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{10} - 6\,\chi_{11}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{11} +$$
$$12\,i\,\chi_{26}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{11} - 12\,i\,\chi_{30}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{11} - 6\,\chi_{10}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{12} + 12\,i\,\chi_{25}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{12} - 12\,i\,\chi_{29}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{12} -$$
$$12\,i\,\chi_{28}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{13} - 6\,\chi_9\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{13} - 12\,i\,\chi_{22}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{20} + 6\,\chi_8\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{20} + 12\,i\,\chi_{20}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{21} - 12\,i\,\chi_{24}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{21} -$$
$$6\,\chi_7\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{21} + 12\,i\,\chi_{19}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{22} - 12\,i\,\chi_{23}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{22} - 6\,\chi_6\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{22} - 12\,i\,\chi_{22}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{23} - 6\,\chi_5\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{23} -$$
$$12\,i\,\chi_{16}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{30} + 6\,\chi_4\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{30} + 12\,i\,\chi_{14}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{31} - 12\,i\,\chi_{18}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{31} - 6\,\chi_3\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{31} + 12\,i\,\chi_{13}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{32} -$$
$$12\,i\,\chi_{17}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{32} - 6\,\chi_2\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{32} - 12\,i\,\chi_{16}\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{33} - 6\,\chi_1\dagger\,\overset{2^+}{\cdot}\tau^{\parallel}{}_{33}),\ \left\{-\frac{8\,p^2}{t_1},\ -\frac{8\,p^2}{t_1},\ \frac{p^2}{t_1},\ \frac{p^2}{2\,t_1},\ \frac{p^2}{2\,t_1}\right\}\right\}$$

Massless eigenvalues:

$$\left\{-\frac{8\,p^2}{t_1},\ -\frac{8\,p^2}{t_1},\ \frac{p^2}{t_1},\ \frac{p^2}{2\,t_1},\ \frac{p^2}{2\,t_1}\right\}$$

Overall unitarity conditions:

False

Throw: Uncaught Throw[Current end of script!] returned to top level.

Out[1]= Hold[Throw[Current end of script!]]