$$\underbrace{\llcorner : Ч} \rtimes \underbrace{\urcorner : \mathbb{L}} = \underbrace{\llcorner \, \urcorner + \mathbb{L}} : \underbrace{\urcorner^{-1} \ltimes Ч} = {}^{\llcorner}\wr : \Upsilon_{Ч}$$

$$\overbrace{\llcorner \rtimes \lrcorner}^{\nu} = \llcorner^{\mu} \; {}_{\mu}\urcorner^{\nu}$$

$$\underbrace{\Upsilon^{iA}}_{Ч} = {}^{A}\urcorner^{-1}{}_{B} \; Ч^{jB}$$

$$\det \; {}^{x}\underline{\wr} = \det \urcorner = 1$$

$$\underbrace{\partial_{\nu}\Upsilon^{iA}}_{Ч} = 0$$

$$\frac{\partial \Upsilon^{iA}}{\partial Ч^{jB}} = {}^{A}\urcorner^{-1}{}_{B}$$

Poincare invariance $\mathcal{L}_{\psi:\psi} = \mathcal{L}_{{}^{A^{-1}}\Lambda_{B}{}^{jB}\psi : {}_{\mu}\Lambda^{-1\,\nu}\,{}^{A^{-1}}\Lambda_{B}\,{}_{\nu}\psi^{jB}}$

$$\Lambda \ltimes \Lambda^{\nu} = \Lambda^{\mu}\ {}_{\mu}\Lambda^{\nu}$$

$$\underbrace{\Lambda \ltimes \Lambda^{\nu}} = \underbrace{\Lambda\,\Lambda \ltimes}\ \Lambda^{\nu} = \overbrace{\Lambda \rtimes \Lambda}^{\nu} = \Lambda^{\mu}\ {}_{\mu}\Lambda^{\nu} = \underbrace{\Lambda\Lambda^{\mu}}\ {}_{\mu}\Lambda^{\nu} = \Lambda\,\underbrace{\Lambda^{\mu}\ {}_{\mu}\Lambda^{\nu}}$$

$$\underbrace{\Lambda \ltimes \Lambda^{\mu}}\ {}_{\mu}\Lambda^{-1\,\nu} = \Lambda^{\nu}$$

$$\text{LHS} = \underbrace{\Lambda^{\lambda}\ {}_{\lambda}\Lambda^{\mu}}\ {}_{\mu}\Lambda^{-1\,\nu} = \Lambda^{\lambda}\ \underbrace{{}_{\lambda}\Lambda^{\mu}\ {}_{\mu}\Lambda^{-1\,\nu}}_{= {}_{\lambda}\delta^{\nu}} = \Lambda^{\nu}$$

$$\overline{{}^{A^{-1}}\Lambda_{B}{}^{jB}\psi}\,\overset{iA}{\frown}{-1}\ {}^{A}\Lambda^{\mu}_{C}\ {}_{\mu}\Lambda^{-1\,\nu}\ {}^{C^{-1}}\Lambda_{D}\ {}_{\nu}\psi^{D} = \psi^{jB}_{*}\ {}^{A^{-1}}_{*}\Lambda_{B}\ \overset{iA}{\frown}{-1}\ {}^{A}\Lambda^{\mu}_{C}\ {}_{\mu}\Lambda^{-1\,\nu}\ {}^{C^{-1}}\Lambda_{D}\ {}_{\nu}\psi^{D} \underset{\text{ev}}{=} \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{A^{-1}}_{*}\Lambda_{B}\ {}^{A}\Lambda^{\mu}_{C}\ {}_{\mu}\Lambda^{-1\,\nu}\ {}^{C^{-1}}\Lambda_{D}\ {}_{\nu}\psi^{D} \underset{\text{unit}}{=} \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{B}\Lambda$$

$$= \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{B}\underbrace{\Lambda\ \Lambda^{\mu}\ \Lambda^{-1}}_{D}\ {}_{\mu}\Lambda^{-1\,\nu}\ {}_{\nu}\psi^{D} = \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{B}\underbrace{\Lambda \ltimes \Lambda^{\mu}}_{D}\ {}_{\mu}\Lambda^{-1\,\nu}\ {}_{\nu}\psi^{D} = \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{B}\Lambda^{\nu}_{D}\ {}_{\nu}\psi^{D}$$

$$\overline{{}^{A^{-1}}\Lambda_{B}{}^{jB}\psi}\,\overset{iA}{\frown}{-1}\ {}^{A^{-1}}\Lambda_{D}\ \psi^{D} = \psi^{jB}_{*}\ {}^{A^{-1}}_{*}\Lambda_{B}\ \overset{iA}{\frown}{-1}\ {}^{A^{-1}}\Lambda_{D}\ \psi^{D} \underset{\text{ev}}{=} \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{A^{-1}}_{*}\Lambda_{B}\ {}^{A^{-1}}\Lambda_{D}\ \psi^{D} \underset{\text{unit}}{=} \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ \underbrace{{}^{B}\Lambda_{A}\ {}^{A^{-1}}\Lambda_{D}}_{= {}^{B}\delta_{D}}\ \psi^{D} = \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ \psi^{jB}$$

$$\text{RHS} = \overline{{}^{A^{-1}}\Lambda_{B}{}^{jB}\psi}\,\overset{iA}{\frown}{-1}\ \underbrace{{}^{A}\Lambda^{\mu}_{C}\,{}_{\mu}\Lambda^{-1\,\nu}\,{}^{C^{-1}}\Lambda_{D}\,{}_{\nu}\psi^{D} - m\,{}^{A^{-1}}\Lambda_{D}\,\psi^{D}} = \overline{{}^{A^{-1}}\Lambda_{B}{}^{jB}\psi}\,\overset{iA}{\frown}{-1}\ {}^{A}\Lambda^{\mu}_{C}\ {}_{\mu}\Lambda^{-1\,\nu}\ {}^{C^{-1}}\Lambda_{D}\ {}_{\nu}\psi^{D} - m\,\overline{{}^{A^{-1}}\Lambda_{B}{}^{jB}\psi}\,\overset{iA}{\frown}{-1}\ {}^{A^{-1}}\Lambda_{D}\ \psi^{D}$$

$$= \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ {}^{B}\Lambda^{\nu}_{D}\ {}_{\nu}\psi^{D} - m\,\psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ \psi^{jB} = \psi^{jB}_{*}\ \overset{jB}{\frown}{-1}\ \underbrace{{}^{B}\Lambda^{\mu}_{D}\,{}_{\mu}\psi^{D} - m\,\psi^{jB}} = \text{LHS}$$