

$D = 11$ sugra fermi Lagrangian

Salam-Sezgin 272

$$\begin{aligned}
D_A \mathcal{X}_B &= \partial_A \mathcal{X}_B + \frac{1}{4} \omega_{AEF} \Gamma^{EF} \mathcal{X}_B + \omega_{AB}^E \mathcal{X}_E \\
&V \bar{\mathcal{X}}_C \Gamma^{CAB} D_A \mathcal{X}_B \\
&V \left(\bar{\mathcal{X}}_E \Gamma^{EFABCD} \mathcal{X}_F + 12 \bar{\mathcal{X}}^A \Gamma^{BC} \mathcal{X}_D \right) F_{ABCD} \\
&\bar{\mathcal{X}}^A \Gamma^B \mathcal{X}^C \left(\bar{\mathcal{X}}_A \Gamma_B \mathcal{X}_C - 2 \bar{\mathcal{X}}_B \Gamma_C \mathcal{X}_A - 4 \eta_{AB} \bar{\mathcal{X}}_C \Gamma_E \mathcal{X}^E + \frac{3}{2} \bar{\mathcal{X}}_E \Gamma^{EFABC} \mathcal{X}_F \right) \\
&\bar{\mathcal{X}}^A \Gamma^{CD} \mathcal{X}^B \left(\bar{\mathcal{X}}^A \Gamma^{CD} \mathcal{X}^B + 4 \bar{\mathcal{X}}^A \Gamma^{BC} \mathcal{X}^D - \bar{\mathcal{X}}^C \Gamma^{AB} \mathcal{X}^D - \bar{\mathcal{X}}^C \Gamma^{AB} \mathcal{X}^D + \frac{1}{2} \bar{\mathcal{X}}_E \Gamma^{EFABCD} \mathcal{X}_F \right) \\
&V^{-1} \partial_M \left(V V_A^M \bar{\mathcal{X}}_E \Gamma^E \mathcal{X}^A \right)
\end{aligned}$$