$\mathcal{L} = \mathcal{L}_{ ext{free}} + \mathcal{L}_{ ext{int}}$ 

 $= \partial^{\mu} \phi^{*i} \partial_{\mu} \phi_{i} + i \psi^{\dagger i} \overline{\sigma}^{\mu} \partial_{\mu} \psi_{i} - \frac{1}{2} \left( W^{ij} \psi_{i} \psi_{j} + W^{*}_{ij} \psi^{\dagger i} \psi^{\dagger j} \right) - W^{i} W^{*}_{i}$