$$\text{left Weyl spinors } \tfrac{1}{2}{:}0 \begin{cases} {}^{2}\mathbb{C} \ni \mathsf{H} = \left(\overset{A}{\mathsf{H}}\right) = \psi_{L} = \begin{bmatrix}\psi_{1}\\ \psi_{2}\end{bmatrix} = \left(\psi_{A}\right) & \overbrace{\mathsf{\Gamma}\ltimes\mathsf{H}}^{A} = {}^{A}\mathsf{\Gamma}_{B}\overset{B}{\mathsf{H}} \\ \mathbb{C}_{2} \ni \mathsf{Y} = \left(\mathsf{Y}_{A}\right) = \psi^{*}_{R} = \begin{bmatrix}\psi^{1} & \psi^{2}\end{bmatrix} = \left(\psi^{A}\right) & \underbrace{\mathsf{\Gamma}\ltimes\mathsf{Y}}_{B} = \mathsf{Y}_{A}\,{}^{A}\mathsf{\Gamma}^{-1}_{B} \end{cases}$$

$$\text{right Weyl spinors } 0{:}\tfrac{1}{2} \begin{cases} {}^{2}\mathbb{C} \ni \overset{*}{\mathsf{Y}} = \left(\overset{*}{\mathsf{Y}}_{A}\right) = \psi_{R} = \begin{bmatrix}\overset{*}{\psi}{}^{\dot 1}\\ \overset{*}{\psi}{}^{\dot 2}\end{bmatrix} = \left(\overset{*}{\psi}{}^{\dot A}\right) & \overbrace{\mathsf{\Gamma}\ltimes\mathsf{H}}^{A} = {}^{A}\overset{-*}{\mathsf{\Gamma}}_{B}\overset{B}{\mathsf{H}} \\ \mathbb{C}_{2} \ni \overset{*}{\mathsf{H}} = \left(\underset{*}{\overset{A}{\mathsf{H}}}\right) = \psi^{*}_{L} = \begin{bmatrix}\overset{*}{\psi}_{\dot 1} & \overset{*}{\psi}_{\dot 2}\end{bmatrix} = \left(\overset{*}{\psi}_{\dot A}\right) & \underbrace{\mathsf{\Gamma}\ltimes\mathsf{Y}}_{B} = \mathsf{Y}_{A}\,{}^{A}\overset{*}{\mathsf{\Gamma}}_{B} \end{cases}$$

$$\text{Dirac } \tfrac{1}{2}{:}0\oplus 0{:}\tfrac{1}{2} \begin{cases} \begin{bmatrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{bmatrix} = \begin{bmatrix}\overset{A}{\mathsf{H}}\\ \overset{*}{\mathsf{Y}}_{A}\end{bmatrix} = \psi = \begin{bmatrix}\psi_{L}\\ \psi_{R}\end{bmatrix} = \begin{bmatrix}\psi_{1}\\ \psi_{2}\\ \overset{*}{\psi}{}^{\dot 1}\\ \overset{*}{\psi}{}^{\dot 2}\end{bmatrix} = \begin{bmatrix}\psi_{A}\\ \overset{*}{\psi}{}^{\dot A}\end{bmatrix} \\ \begin{bmatrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{bmatrix}^{\sharp} = \begin{bmatrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{bmatrix}^{*} \begin{array}{c|c} 0 & 1 \\ \hline 1 & 0 \end{array} = \begin{bmatrix}\mathsf{Y} & \overset{*}{\mathsf{H}}\end{bmatrix} = \begin{bmatrix}\mathsf{Y}_{A} & \underset{*}{\overset{A}{\mathsf{H}}}\end{bmatrix} = \overset{\sharp}{\psi} = \overset{*}{\psi}\gamma_{0} = \begin{bmatrix}\overset{*}{\psi}_{R} & \overset{*}{\psi}_{L}\end{bmatrix} = \left(\psi^{\dot 1}\psi^{\dot 2}\overset{*}{\psi}_{1}\overset{*}{\psi}_{2}\right) = \begin{bmatrix}\psi^{\dot A} & \overset{*}{\psi}_{A}\end{bmatrix} \end{cases}$$

$$\text{Majorana spinors } \tfrac{1}{2}{:}0 \underset{\mathbb{R}}{\oplus} 0{:}\tfrac{1}{2} \begin{cases} \begin{bmatrix}\bar{\psi}{}^{\dot 1}\\ \bar{\psi}{}^{\dot 2}\end{bmatrix} = \Psi_{R} = -i\sigma^{2}\bar{\Psi}_{L} = \begin{array}{c|c} 0 & -1 \\ \hline 1 & 0 \end{array} \begin{bmatrix}\bar{\psi}_{1}\\ \bar{\psi}_{2}\end{bmatrix} = \begin{bmatrix}-\bar{\psi}_{2}\\ \bar{\psi}_{1}\end{bmatrix} \\ \begin{bmatrix}\Psi_{L}\\ -i\sigma^{2}\bar{\Psi}_{L}\end{bmatrix} = \begin{bmatrix}\psi_{1}\\ \psi_{2}\\ -\bar{\psi}_{2}\\ \bar{\psi}_{1}\end{bmatrix} = \begin{bmatrix}\overset{A}{\mathsf{H}}\\ -i^{B}\sigma^{2}_{A}\overline{\overset{A}{\mathsf{H}}}\end{bmatrix} \end{cases}$$

$$2^{N} \ni A \subset N$$

$$\text{dof } \begin{bmatrix}\overset{A}{\mathsf{H}}\\ \overset{*}{\mathsf{Y}}_{A}\end{bmatrix} : \begin{bmatrix}{}_{\mu}\overset{A}{\mathsf{H}}\\ {}_{\mu}\overset{*}{\mathsf{Y}}_{A}\end{bmatrix} \in {}^{2^{N}}\mathbb{K} \times {}^{2^{N}}_{\;d}\mathbb{K}$$

$$\boxed{\mathsf{\Lambda} \begin{matrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{matrix} : \mathsf{\Lambda} \begin{matrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{matrix}} = \boxed{\mathsf{\Lambda}^{s}_{\sigma} \begin{matrix}\overset{A}{\mathsf{H}}\\ \overset{*}{\mathsf{Y}}_{A}\end{matrix} : {}_{\mu}\mathsf{\Lambda}^{s}_{\sigma} \begin{matrix}{}_{\mu}\overset{A}{\mathsf{H}}\\ {}_{\mu}\overset{*}{\mathsf{Y}}_{A}\end{matrix}}$$

$$= \det \mathsf{\Lambda}^{m}_{\mu} \begin{bmatrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{bmatrix}^{\sharp} \mathsf{\Lambda}^{\mu}_{m}\ \gamma^{m} \left( \begin{bmatrix}{}_{\mu}\mathsf{H}\\ {}_{\mu}\overset{*}{\mathsf{Y}}\end{bmatrix} - \frac{1}{4}\omega^{mn}_{\mu}\gamma_{mn} \begin{bmatrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{bmatrix} \right) = \begin{bmatrix}\mathsf{Y} & \underset{*}{\mathsf{H}}\end{bmatrix} \begin{array}{c|c} 0 & \sigma^{\mu} \\ \hline \tilde{\sigma}^{\mu} & 0 \end{array} \begin{bmatrix}{}_{\mu}\mathsf{H}\\ {}_{\mu}\overset{*}{\mathsf{Y}}\end{bmatrix} - m \begin{bmatrix}\mathsf{Y} & \underset{*}{\mathsf{H}}\end{bmatrix} \begin{bmatrix}\mathsf{H}\\ \overset{*}{\mathsf{Y}}\end{bmatrix}$$

$$= \mathsf{Y}\,\sigma^{\mu}\ {}_{\mu}\overset{*}{\mathsf{Y}} + \underset{*}{\mathsf{H}}\,\tilde{\sigma}^{\mu}\ {}_{\mu}\mathsf{H} - m\left(\mathsf{Y}\mathsf{H} + \underset{*}{\mathsf{H}}\overset{*}{\mathsf{Y}}\right) = \mathsf{Y}_{A}\,{}^{A}\sigma^{\mu}_{B}\ {}_{\mu}\overset{*}{\mathsf{Y}}_{B} + \underset{*}{\overset{A}{\mathsf{H}}}\,{}^{A}\tilde{\sigma}^{\mu}_{B}\ {}_{\mu}\overset{B}{\mathsf{H}} - m\left(\mathsf{Y}_{A}\overset{A}{\mathsf{H}} + \underset{*}{\overset{A}{\mathsf{H}}}\overset{*}{\mathsf{Y}}_{A}\right)$$

$$= \Psi_{A} \left( {}^{A}\sigma^{\mu}_{B}{}_{\mu}\overset{*}{\Psi}_{B} - m\reflectbox{$\Psi$}^{A} \right) + \underset{*}{\reflectbox{$\Psi$}}^{A} \left( {}^{A}\widetilde{\sigma}^{\mu}_{B}{}_{\mu}\reflectbox{$\Psi$}^{B} - m\overset{*}{\Psi}_{A} \right)$$

$$= \overset{\sharp}{\psi}\, \gamma^{\mu}{}_{\mu}\Psi - m\overset{\sharp}{\psi}\,\psi = \psi^{*}_{R}\, \sigma^{\mu}{}_{\mu}\Psi_{R} + \psi^{*}_{L}\, \sigma^{2}\, \overset{t}{\sigma}^{\mu}\, \sigma^{2}{}_{\mu}\Psi_{L} - m\left( \psi^{*}_{R}\psi_{L} + \psi^{*}_{L}\psi_{R} \right)$$

$$= \psi^{A}\, \sigma^{\mu}_{A\dot{B}}{}_{\mu}\overset{*}{\Psi}^{\dot{B}} + \overset{*}{\psi}_{\dot{A}}\, \overbrace{\sigma^{2}\overset{t}{\sigma}^{\mu}\sigma^{2}}^{\dot{A}B}{}_{\mu}\Psi_{B} - m\left( \psi^{A}\psi_{A} + \overset{*}{\psi}_{\dot{A}}\overset{*}{\psi}^{\dot{A}} \right)$$