$$\begin{cases} {}^{n}\underset{\mathbb{R}}{\mathbb{C}}{}^{\mathsf{C}}_{n} \\ {}^{n}\underset{\mathbb{C}}{\mathbb{H}}{}^{\mathsf{C}}_{n} \end{cases} \xrightarrow[\begin{array}{c|c} 0 & \not{1} \\ \hline -\not{1} & 0 \end{array}]{\begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array}} \begin{cases} {}^{n}_{2}\mathbb{R}^{\mathsf{C}}_{n} \\ {}^{n}_{2}\mathbb{C}^{\mathsf{C}}_{n} \end{cases}$$

$$\Gamma = a + bi \Longrightarrow \overset{*}{\Gamma} = \overset{*}{a} - \overset{*}{b} i \Longrightarrow \underset{\mathbb{R}}{\Gamma} = \begin{array}{c|c} a & b \\ \hline -b & a \end{array} \underset{{}^{*}\text{hom}}{\Longrightarrow} \underset{\mathbb{R}}{\overset{*}{\Gamma}} = \begin{array}{c|c} a & b \\ \hline -b & \overset{*}{a} \end{array} = \begin{array}{c|c} \overset{*}{a} & -\overset{*}{b} \\ \hline \overset{*}{b} & \overset{*}{a} \end{array} = \underbrace{\overset{*}{a} - \overset{*}{b} i}_{\mathbb{C}} = \underset{\mathbb{R}}{\overset{*}{\Gamma}}$$

$$\Gamma = a + bj \Longrightarrow \overset{*}{\Gamma} = \overset{*}{a} - j\overset{*}{b} = \overset{*}{a} - \overset{\dagger}{b} j \Longrightarrow \underset{\mathbb{C}}{\Gamma} = \begin{array}{c|c} a & b \\ \hline -\bar{b} & \bar{a} \end{array} \underset{{}^{*}\text{hom}}{\Longrightarrow} \underset{\mathbb{C}}{\overset{*}{\Gamma}} = \begin{array}{c|c} a^{*} & b \\ \hline -\bar{b} & \bar{a} \end{array} = \begin{array}{c|c} \overset{*}{a} & -\overset{\dagger}{b} \\ \hline \overset{*}{b} & \overset{\dagger}{a} \end{array} = \underbrace{\overset{*}{a} - \overset{\dagger}{b} j}_{\mathbb{C}} = \underset{\mathbb{C}}{\overset{*}{\Gamma}}$$

$${}^{n}\underset{2}{\mathbb{R}}{}^{\mathsf{C}}_{n} \xrightarrow{\begin{array}{c|c} 1 & 0 \\ \hline 0 & -1 \end{array}} {}^{n}\underset{\mathbb{R}}{\mathbb{C}}{}^{\mathsf{C}}_{n}$$

$$\begin{cases} {}^{n}_{2}\underset{\mathbb{R}}{\mathbb{C}}{}^{\mathsf{C}}_{n} \\ {}^{n}_{2}\underset{\mathbb{C}}{\mathbb{H}}{}^{\mathsf{C}}_{n} \end{cases} = \begin{cases} \Gamma \in {}^{n}_{4}\mathbb{R}^{\mathsf{C}}_{n} & \Gamma \begin{array}{c|c} 0 & \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} \\ \hline \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} & 0 \end{array} = \begin{array}{c|c} 0 & \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} \\ \hline \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} & 0 \end{array} \Gamma \\ \Gamma \in {}^{n}_{4}\mathbb{C}^{\mathsf{C}}_{n} & \Gamma \begin{array}{c|c} 0 & \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} \\ \hline \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} & 0 \end{array} = \begin{array}{c|c} 0 & \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} \\ \hline \begin{array}{c|c} 0 & 1 \\ \hline -1 & 0 \end{array} & 0 \end{array} \bar{\Gamma} \end{cases}$$

$$\begin{array}{c|c}\bar{\sigma} & -\sigma i\\ \hline -i\bar{\sigma} & \sigma\end{array}\;{}^{n}\mathbb{C}^{\complement}_{\underset{-}{n}}\begin{array}{c|c}\sigma & \sigma i\\ \hline i\bar{\sigma} & \bar{\sigma}\end{array} = {}^{n}\mathbb{C}^{\complement}_{\underset{\mathbb{R}}{n}}$$

$$\Gamma = a + bi \in {}^{n}\mathbb{C}^{\complement}_{n} \Longrightarrow \underset{-}{\Gamma} = \begin{array}{c|c}\bar{\Gamma} & 0\\ \hline 0 & \Gamma\end{array} = \underset{\mathbb{C}}{\bar{\Gamma}}$$

$$\begin{array}{c|c}\bar{\sigma} & -\sigma i\\ \hline -i\bar{\sigma} & \sigma\end{array}\;\begin{array}{c|c}a-bi & 0\\ \hline 0 & a+bi\end{array}\;\begin{array}{c|c}\sigma & \sigma i\\ \hline i\bar{\sigma} & \bar{\sigma}\end{array} = \begin{array}{c|c}\bar{\sigma} & -\sigma i\\ \hline -i\bar{\sigma} & \sigma\end{array}\;\underset{-}{\Gamma}\;\begin{array}{c|c}\sigma & \sigma i\\ \hline i\bar{\sigma} & \bar{\sigma}\end{array} = \underset{\mathbb{R}}{\Gamma} = \begin{array}{c|c}a & b\\ \hline -b & a\end{array}$$

$$\sigma \in \mathbb{C}^{\cup} \Longrightarrow \begin{cases}\begin{array}{c|c}\bar{\sigma} & -j\bar{\sigma}\\ \hline \varkappa\bar{\sigma} & \varkappa j\bar{\sigma}\end{array}\;{}^{n}\mathbb{H}^{\supset}_{\underset{\mathbb{C}}{n}}\begin{array}{c|c}\sigma & \varkappa\sigma\\ \hline \sigma j & -\varkappa\sigma j\end{array} = {}^{n}\mathbb{H}^{\supset}_{\underset{\times}{n}} \qquad {}^{n}\mathbb{H}^{\supset}_{\underset{\mathbb{C}}{n}} = \begin{array}{c|c}\sigma & \varkappa\sigma\\ \hline \sigma j & -\varkappa\sigma j\end{array}\;{}^{n}\mathbb{H}^{\supset}_{\underset{\times}{n}}\begin{array}{c|c}\bar{\sigma} & -j\bar{\sigma}\\ \hline \varkappa\bar{\sigma} & \varkappa j\bar{\sigma}\end{array}\\ {}^{n}\mathbb{H}^{\supset}_{\underset{=}{n}} = \begin{array}{c|c}\bar{\sigma} & -j\bar{\sigma}\\ \hline -\varkappa i\bar{\sigma} & \varkappa ji\bar{\sigma}\end{array}\;{}^{n}\mathbb{H}^{\supset}_{\underset{\mathbb{C}}{n}}\begin{array}{c|c}\sigma & \varkappa\sigma i\\ \hline \sigma j & \varkappa\sigma ij\end{array} \qquad \begin{array}{c|c}\sigma & \varkappa\sigma i\\ \hline \sigma j & \varkappa\sigma ij\end{array}\;{}^{n}\mathbb{H}^{\supset}_{\underset{=}{n}}\begin{array}{c|c}\bar{\sigma} & -j\bar{\sigma}\\ \hline -\varkappa i\bar{\sigma} & \varkappa ji\bar{\sigma}\end{array} = {}^{n}\mathbb{H}^{\supset}_{\underset{\mathbb{C}}{n}}\end{cases}$$

$$\begin{array}{c|c}\bar{\sigma} & -j\bar{\sigma}\\ \hline \varkappa\bar{\sigma} & \varkappa j\bar{\sigma}\end{array}\;\begin{array}{c|c}a & b\\ \hline -\bar{b} & \bar{a}\end{array}\;\underset{\text{unit}}{\begin{array}{c|c}\sigma & \varkappa\sigma\\ \hline \sigma j & -\varkappa\sigma j\end{array}} = \begin{array}{c|c}a+bj & 0\\ \hline 0 & a-bj\end{array}$$

$$\Gamma = a + bj \in {}^{n}\mathbb{H}^{\supset}_{n} \Longrightarrow \Gamma i \overset{*}{\Gamma} = i \Longrightarrow \overset{*}{\Gamma}{}^{-1} = -i\Gamma i = -i\underbrace{a+bj}i = a - bj$$

$$\begin{array}{c|c}\bar{\sigma} & -j\bar{\sigma}\\ \hline -\varkappa i\bar{\sigma} & \varkappa ji\bar{\sigma}\end{array}\;\begin{array}{c|c}a & b\\ \hline -\bar{b} & \bar{a}\end{array}\;\begin{array}{c|c}\sigma & \varkappa\sigma i\\ \hline \sigma j & \varkappa\sigma ij\end{array} = \begin{array}{c|c}a+bj & 0\\ \hline 0 & a+bj\end{array}$$

$$\Gamma \in {}^{n}\mathbb{K}^{\complement}_{n} \Longrightarrow \underset{\times}{\Gamma} = \begin{array}{c|c}\Gamma & 0\\ \hline 0 & \overset{*}{\Gamma}{}^{-1}\end{array} \Longrightarrow \begin{cases}\underset{\times}{\overset{*}{\Gamma}} = \begin{array}{c|c}\overset{*}{\Gamma} & 0\\ \hline 0 & \overset{-1}{\Gamma}\end{array}\\ \underset{\times}{\overset{-1}{\Gamma}} = \begin{array}{c|c}\overset{-1}{\Gamma} & 0\\ \hline 0 & \overset{*}{\Gamma}\end{array}\end{cases}$$