

$$\begin{cases} {}^n\mathbb{R}_n^U = {}^n\mathbb{R}_n^C \cap {}^n\mathbb{C}_n^D \\ {}^n\mathbb{C}_n^U = {}^n\mathbb{C}_n^C \cap {}^n\mathbb{H}_n^D \end{cases} \xrightarrow{i} \begin{cases} {}^n\mathbb{C}_n^D \\ {}^n\mathbb{H}_n^D \end{cases}$$

$$\Gamma \in {}^n\mathbb{R}_n^U \Rightarrow \Gamma \overset{t}{\Gamma} = \Gamma \overset{*}{\Gamma} = 1$$

$$\Gamma \in {}^n\mathbb{C}_n^U \Rightarrow \Gamma i \overset{*}{\Gamma} = i \Gamma \overset{*}{\Gamma} = i$$

$$\begin{cases} {}^n\mathbb{R}_n^U = {}^n\mathbb{R}_n^C \cap {}^n\mathbb{C}_n^D \\ {}^n\mathbb{C}_n^U = {}^n\mathbb{C}_n^C \cap {}^n\mathbb{H}_n^D \end{cases} \xrightarrow{\begin{array}{c|c} \pm & 0 \\ \hline 0 & \pm \\ \hline i & 0 \\ \hline 0 & i \end{array}} \begin{cases} {}^n\mathbb{C}_n^D \\ {}^n\mathbb{H}_n^D \end{cases}$$

$$\Gamma \in {}^n\mathbb{R}_n^U \Rightarrow \Gamma \overset{T}{\Gamma} = \Gamma \overset{*}{\Gamma} = \frac{1}{0} \Big| \frac{0}{1}$$

$$\Gamma \in {}^n\mathbb{C}_n^U \Rightarrow \Gamma \overset{*}{\Gamma} = \frac{1}{0} \Big| \frac{0}{1} \Rightarrow \Gamma \frac{i}{0} \Big| \frac{0}{i} \overset{*}{\Gamma} = \frac{i}{0} \Big| \frac{0}{i} \Gamma \overset{*}{\Gamma} = \frac{i}{0} \Big| \frac{0}{i} \Rightarrow \Gamma \in {}^n\mathbb{H}_n^D$$

$$\sigma \in \mathbb{C}^U \Rightarrow \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \underset{\text{unit}}{n\mathbb{C}_{\mathbb{R}^n}^U} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} \xrightarrow{\frac{0 \mid \ddagger}{-\ddagger \mid 0}} n\mathbb{H}_{\mathbb{C}^n}^D$$

$$\begin{aligned} \Gamma \in n\mathbb{C}_n^U &\Rightarrow \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \underset{\mathbb{R}}{\Gamma} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} \begin{array}{c} i \mid 0 \\ 0 \mid -i \end{array} \overbrace{\frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \underset{\mathbb{R}}{\Gamma} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}}}^* \\ &= \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \underset{\mathbb{R}}{\Gamma} \underbrace{\frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} \begin{array}{c} i \mid 0 \\ 0 \mid -i \end{array} \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau}}_{\frac{0 \mid -\varkappa}{\varkappa \mid 0}} \underset{\mathbb{R}}{\Gamma}^* \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} = \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \underset{\mathbb{R}}{\Gamma} \underbrace{\frac{0 \mid -\varkappa}{\varkappa \mid 0}}_{= \frac{0 \mid -\varkappa}{\varkappa \mid 0} \underset{\mathbb{R}}{\Gamma}^*} \underset{\mathbb{R}}{\Gamma}^* \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} \\ &= \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \frac{0 \mid -\varkappa}{\varkappa \mid 0} \underbrace{\underset{\mathbb{R}}{\Gamma} \underset{\mathbb{R}}{\Gamma}^*}_{\frac{1 \mid 0}{0 \mid 1}} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} = \frac{\varkappa\sigma i \mid -\sigma}{\tau \mid -\varkappa\tau i} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} = \frac{i \mid 0}{0 \mid -i} \\ n\mathbb{C}_{\mathbb{R}^n}^U \times \frac{\ddagger \mid 0}{0 \mid \ddagger} = 0 &\Rightarrow \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \underset{\mathbb{R}^n}{n\mathbb{C}_{\mathbb{R}^n}^U} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} \times \varkappa i \sigma \tau \frac{0 \mid \ddagger}{-\ddagger \mid 0} = 0 \\ &= \frac{\varkappa\sigma \mid i\sigma}{i\tau \mid \varkappa\tau} \frac{\ddagger \mid 0}{0 \mid \ddagger} \frac{\varkappa\bar{\sigma} \mid -\bar{\tau}i}{-\bar{\sigma}i \mid \varkappa\bar{\tau}} \end{aligned}$$