$$\mathbb{R}^{d|1} = \frac{\begin{array}{c|c|c} 0 & x & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array}}{x \in \mathbb{R}^d: \quad \xi \in {}^{2^\ell}\mathbb{C}}$$

$$\begin{array}{c|c|c} 0 & x & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} \times \begin{array}{c|c|c} 0 & x & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} = \begin{array}{c|c|c} 0 & x+y & \xi+\eta \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array}$$

$$\exp \begin{array}{c|c|c} 0 & x & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} = \begin{array}{c|c|c} 1 & x+\xi\xi^T/2 & \xi \\ \hline 0 & 1 & 0 \\ \hline 0 & \xi^T & 1 \end{array}$$

$$\begin{array}{c|c|c} 0 & \overset{2}{x} & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} = \begin{array}{c|c|c} 0 & \xi\xi^T & 0 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}$$

$$\begin{array}{c|c|c} 0 & \overset{3}{x} & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} = \begin{array}{c|c|c} 0 & x & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} \begin{array}{c|c|c} 0 & \xi\xi^T & 0 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array} = \begin{array}{c|c|c} 0 & 0 & 0 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array}$$

$$\Longrightarrow \text{ LHS } = \begin{array}{c|c|c} 1 & 0 & 0 \\ \hline 0 & 1 & 0 \\ \hline 0 & 0 & 1 \end{array} + \begin{array}{c|c|c} 0 & x & \xi \\ \hline 0 & 0 & 0 \\ \hline 0 & \xi^T & 0 \end{array} + \frac{1}{2} \begin{array}{c|c|c} 0 & \xi\xi^T & 0 \\ \hline 0 & 0 & 0 \\ \hline 0 & 0 & 0 \end{array} = \text{ RHS}$$

$$\mathbb{R}^{d|1} \triangle_{\infty} \mathbb{K} \ni {}^{x:\xi}\P = {}^{x}_{+}\P \; {}^{\xi}_{-}\P$$