



$$\begin{bmatrix} R_{11} & R_{12} & R_{13} \\ R_{21} & R_{22} & R_{23} \\ R_{31} & R_{32} & R_{33} \end{bmatrix} \begin{bmatrix} u_{10} \\ u_{20} \\ u_{30} \end{bmatrix} = \begin{bmatrix} u_{1c} \\ u_{2c} \\ u_{3c} \end{bmatrix}$$

$u_{10x} \quad u_{10y} \quad u_{10z}$

$$\begin{bmatrix} R_{11} & R_{12} & R_{13} \\ R_{21} & R_{22} & R_{23} \\ R_{31} & R_{32} & R_{33} \end{bmatrix} \begin{bmatrix} u_{10x} \\ u_{10y} \\ u_{10z} \end{bmatrix} = \begin{bmatrix} u_{1cx} \\ u_{1cy} \\ u_{1cz} \end{bmatrix}$$

$$\begin{bmatrix} R_{11} \\ R_{12} \\ R_{13} \\ \vdots \\ R_{33} \end{bmatrix} = \begin{bmatrix} u_{1cx} \\ u_{1cy} \\ u_{1cz} \end{bmatrix}$$



$$\begin{bmatrix} v_{10x} & v_{10y} & v_{10z} \\ v_{10x} & v_{10y} & v_{10z} \end{bmatrix} = \begin{bmatrix} R_{11} \\ R_{12} \\ R_{13} \\ R_{21} \\ R_{22} \\ R_{23} \\ R_{31} \\ R_{32} \\ R_{33} \end{bmatrix} = \begin{bmatrix} v_{1x} \\ v_{1y} \\ v_{1z} \\ v_{2x} \\ v_{2y} \\ v_{2z} \\ v_{3x} \\ v_{3y} \\ v_{3z} \end{bmatrix}$$

$$\begin{bmatrix} R_{11} & R_{12} & R_{13} \\ R_{21} & R_{22} & R_{23} \\ R_{31} & R_{32} & R_{33} \end{bmatrix} \begin{bmatrix} v_{10x} \\ v_{10y} \\ v_{10z} \end{bmatrix} = \begin{bmatrix} v_{1x} \\ v_{1y} \\ v_{1z} \end{bmatrix}$$



$$\underline{R = V' V^T}$$