

LU DECOMPOSITION

AARON XU, WILL FLANDERS

$$\text{In}[21]:= \frac{1}{a_{11}} \left(\begin{pmatrix} a_{11} & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & -a_{21} & a_{11} & 0 \\ 0 & -a_{31} & 0 & a_{11} \end{pmatrix} \cdot \begin{pmatrix} 1 & a_{01} & a_{02} & a_{03} \\ 0 & a_{11} & a_{12} & a_{13} \\ 0 & a_{21} & a_{22} & a_{23} \\ 0 & a_{31} & a_{32} & a_{33} \end{pmatrix} \right)$$

Out[22]//MatrixForm=

$$\begin{pmatrix} 1 & a_{01} & a_{02} & a_{03} \\ 0 & 1 & \frac{a_{12}}{a_{11}} & \frac{a_{13}}{a_{11}} \\ 0 & 0 & \frac{-a_{12} a_{21} + a_{11} a_{22}}{a_{11}} & \frac{-a_{13} a_{21} + a_{11} a_{23}}{a_{11}} \\ 0 & 0 & \frac{-a_{12} a_{31} + a_{11} a_{32}}{a_{11}} & \frac{-a_{13} a_{31} + a_{11} a_{33}}{a_{11}} \end{pmatrix}$$