

${}^{\mathbb{C}}_n\mathbb{C}^p \ni \mathcal{A}^i = \mathcal{A}^1 \mid \dots \mid \mathcal{A}^p$  co-frames

$${}^{\mathbb{C}}_{n\bullet}\mathbb{C}^p = \frac{\mathbb{1} \in {}_n\mathbb{C}}{\dim_{\mathbb{C}} \mathbb{1} = p}$$

$$\begin{array}{ccccc}
 \mathcal{A}^i & \in & {}^{\mathbb{C}}_n\mathbb{C}^p & \supset & {}^{\mathbb{C}}U^p \\
 \downarrow & & \downarrow & & \downarrow \\
 \mathcal{A}^i_p\mathbb{C} & \in & {}^{\mathbb{C}}_{n\bullet}\mathbb{C}^p & \ni & U
 \end{array}$$