

$$I \in \begin{bmatrix} r+s \\ r \end{bmatrix}$$

$${}^r\mathbb{C}\mathbb{K}_{r+s}^I = \frac{\mathcal{J} \in {}^r\mathbb{K}_{r+s}}{\mathcal{J}_I \in {}^r\mathbb{K}_I \text{ inv}} \underset{\text{off}}{\subset} {}^r\mathbb{K}_{r+s}$$

$$\pi \text{ off} \Rightarrow \mathbb{K}_r \underset{\text{off}}{r}\mathbb{C}\mathbb{K}_{r+s}^I \subset {}^r\mathbb{K}_s^\times$$

$${}^r\mathbb{C}\mathbb{K}_{r+s} = \bigcup_I {}^r\mathbb{C}\mathbb{K}_{r+s}^I$$

$$\pi \text{ surj} \Rightarrow {}^r\mathbb{K}_s^\times = \mathbb{K}_r \underset{\text{off}}{r}\mathbb{C}\mathbb{K}_{r+s} = \bigcup_I \mathbb{K}_r \underset{\text{off}}{r}\mathbb{C}\mathbb{K}_{r+s}^I$$

$${}^r\mathbb{C}\mathbb{K}_{r+s}^I = \frac{\mathcal{J}|\mathcal{J} P_I}{\mathcal{J} \in {}^r\mathbb{C}\mathbb{K}_r}$$

$$\mathcal{J} \in {}^r\mathbb{K}_s \xrightarrow[\text{bij}]{\Phi_I} \mathbb{K}_r \underset{\text{off}}{r}\mathbb{C}\mathbb{K}_{r+s}^I \ni \mathbb{K}_r \underbrace{1|\mathcal{J}} P_I \subset \mathbb{K}_{r+s}$$

$$\begin{cases} \mathbb{K}_r \underbrace{\mathcal{J}|\mathcal{J}} P_I \\ \mathbb{K}_r \mathcal{J} \end{cases} \in \mathbb{K}_r \underset{\text{off}}{r}\mathbb{C}\mathbb{K}_{r+s}^I \xrightarrow[\text{bij}]{\Phi_I^{-1}} {}^r\mathbb{K}_s \ni \begin{cases} \overline{\mathcal{J}|\mathcal{J}}^{-1} \\ \underbrace{\mathcal{J} \overline{P}_I^{-1}}_{r|} \underbrace{\mathcal{J} \overline{P}_I^{-1}}_{|s} \end{cases}$$

$\Phi_I^{-1}$  well-def

$$\underbrace{\mathcal{J}|\mathcal{J}} P_I = \underbrace{\mathcal{J}|\mathcal{J}|\mathcal{J}|\mathcal{J}} P_I \mapsto \overline{\underbrace{\mathcal{J}|\mathcal{J}}^{-1}} \underbrace{\mathcal{J}|\mathcal{J}} = \overline{\mathcal{J}|\mathcal{J}}^{-1} \underbrace{\mathcal{J}|\mathcal{J}} = \overline{\mathcal{J}|\mathcal{J}} \mathcal{J}$$

$$\Phi_I^{-1} \circ \Phi_I = \text{id} = \Phi_I \circ \Phi_I^{-1}$$

$$\begin{aligned} \Phi_I^{-1} \circ \Phi_I (\mathfrak{L}) &= \Phi_I^{-1} \left( \mathbb{K}_r \underbrace{1|\mathfrak{L}} P_I \right) = 1^{-1} \mathfrak{L} = \mathfrak{L} \\ \Phi_I \circ \Phi_I^{-1} \left( \mathbb{K}_r \underbrace{\mathfrak{L}|\mathfrak{L}} P_I \right) &= \Phi_I \left( \mathfrak{L}^{-1} \mathfrak{L} \right) = \mathbb{K}_r \underbrace{1|\mathfrak{L}^{-1} \mathfrak{L}} P_I = \mathbb{K}_r \mathfrak{L}^{-1} \underbrace{\mathfrak{L}|\mathfrak{L}} P_I = \mathbb{K}_r \underbrace{\mathfrak{L}|\mathfrak{L}} P_I \end{aligned}$$

$$\begin{array}{ccc} {}_I^r \mathbb{K}_s^J & \xrightarrow{I\Phi} & \mathbb{K}_{r\mathbb{C}}^r \mathbb{K}_{r+s}^I \cap \mathbb{K}_{r\mathbb{C}}^r \mathbb{K}_{r+s}^J \\ \downarrow I\Phi^J & & \uparrow J\Phi \\ {}_J^r \mathbb{K}_s^I & & \end{array}$$

$${}_I\Phi^J (\mathfrak{L}) = {}_J\Phi^{-1} \circ {}_I\Phi (\mathfrak{L}) = {}_J\Phi^{-1} \left( \mathbb{K}_r \underbrace{1|\mathfrak{L}} P_I \right) = \underbrace{\overline{1|\mathfrak{L}} P_I \bar{P}_J^{-1}}_{r|}^{-1} \underbrace{\overline{1|\mathfrak{L}} P_I \bar{P}_J^{-1}}_{|s}$$