

$$U \xrightarrow[\text{stet}]{\mathbb{A}} {}_n\mathbb{K}^n$$

$$\frac{dy}{dx} = \mathbb{A} y$$

$$W = U \times {}_n\mathbb{K}$$

$$U \ni a \xrightarrow{\text{PIC}} \bigwedge_{b \in {}_n\mathbb{K}} \bigvee U \xrightarrow[\text{max Lsg}]{\mathbb{A}} {}_n\mathbb{K}: \mathbb{A} a = b$$

$$U \xrightarrow[\text{diff+}]{\mathbb{A}} {}_n\mathbb{K} \quad \text{hom Lsg-Raum}$$

$$\mathbb{A} = \mathbb{A} \cdot \mathbb{A}: \quad \mathbb{A} = \mathbb{A}_i^j \cdot \mathbb{A}$$

$$U \xrightarrow[\text{lin UR}]{\mathbb{A}} {}_n\mathbb{K} \subset U \xrightarrow[\text{lin UR}]{\mathbb{A}} {}_n\mathbb{K}$$

$$U \xrightarrow[\text{lin UR}]{\mathbb{A}} {}_n\mathbb{K} \ni \mathbb{A} \Rightarrow \underline{\mathbb{A} + \mathbb{A}} = \mathbb{A} + \mathbb{A} = \mathbb{A} \cdot \mathbb{A} + \mathbb{A} \cdot \mathbb{A} = \mathbb{A} \cdot (\mathbb{A} + \mathbb{A}) \Rightarrow \mathbb{A} + \mathbb{A} \in U \xrightarrow[\text{lin UR}]{\mathbb{A}} {}_n\mathbb{K}$$

$$\bigwedge_{j \in n} \bigvee U \xrightarrow[\text{hom Lsg}]{\mathbb{A}^j} {}_n\mathbb{K}: \mathbb{A}^j = \mathbb{A}^j$$

$$U \xrightarrow[\text{hom Lsg}]{\begin{bmatrix} \mathbb{A}^0 & \mathbb{A}^{n-1} \end{bmatrix}} {}_n\mathbb{K}^n$$

$${}^x\mathbb{A}^j = \mathbb{A}^j \text{ lin unabh}$$

$$\text{WRO det} \begin{array}{c|c} \begin{matrix} x \mathbb{A}^0 \\ 0 \mathbb{A}^0 \\ \dots \\ x \mathbb{A}^0 \\ \dots \\ x \mathbb{A}^0 \end{matrix} & \begin{matrix} x \mathbb{A}^{n-1} \\ 0 \mathbb{A}^{n-1} \\ \dots \\ x \mathbb{A}^{n-1} \\ \dots \\ x \mathbb{A}^{n-1} \end{matrix} \end{array} \neq 0$$

$$\mathbb{A}^0 \dots \mathbb{A}^{n-1} \in_{\text{basic}} U \mathbb{A}_{1+}^n \mathbb{K} : \dim_{\mathbb{K}} U \mathbb{A}_{1+}^n \mathbb{K} = n$$

$\mathbb{A}^0 \dots \mathbb{A}^{n-1}$ free

$$0 = \sum_j^n \mathbb{A}^j \underbrace{j^c}_{\in \mathbb{K}} \Rightarrow 0 = \overbrace{\sum_j^n \mathbb{A}^j j^c}^a = \sum_j^n {}^a \mathbb{A}^j j^c \Rightarrow j^c = 0$$

$\mathbb{A}^0 \dots \mathbb{A}^{n-1}$ hull

$$\begin{aligned} \mathbb{A} \in U \mathbb{A}_{1+}^n \mathbb{K} &\Rightarrow {}^a \mathbb{A} = \sum_j^n \mathbb{A}^j j^c = \sum_j^n {}^a \mathbb{A}^j j^c = \overbrace{\sum_j^n \mathbb{A}^j j^c}^a \\ \Rightarrow \mathbb{A} - \sum_j^n \mathbb{A}^j j^c \in U \mathbb{A}_{1+}^n \mathbb{K} \wedge \overbrace{\mathbb{A} - \sum_j^n \mathbb{A}^j j^c}^a = 0 &\stackrel{\text{eind}}{\Rightarrow} \mathbb{A} - \sum_j^n \mathbb{A}^j j^c = 0 \Rightarrow \mathbb{A} = \sum_j^n \mathbb{A}^j j^c \end{aligned}$$

$$U \mathbb{A}_{1+}^n \mathbb{K} \ni {}^x \mathbb{A} \cdot c = {}^x \mathbb{A}^j j^c = \begin{bmatrix} x \mathbb{A}^1 \cdot c \\ x \mathbb{A}^j \cdot c \\ x \mathbb{A}^n \cdot c \end{bmatrix} = \begin{bmatrix} x \mathbb{A}^0 & x \mathbb{A}^{n-1} \end{bmatrix} \begin{bmatrix} 0^c \\ n-1^c \end{bmatrix} \text{ gen sol}$$