

$$\begin{array}{c}
\mathbb{1} \in \bigcap_0^{n/\nu} \mathbb{K} \text{ Ban/Frech} \\
\mathbb{1} \models \mathbb{1} \\
\downarrow \text{) } \\
\left(\overbrace{\mathbb{K} \bigcap_0 \mathbb{1}}^{\mathbb{1}} \right) \subseteq \mathbb{1} \bigcap_0 \mathbb{K} \\
\text{normed } \mathbb{1} \in \bigcap_0^n \mathbb{K}
\end{array}
\begin{array}{c}
\swarrow \\
\searrow \pi \\
\swarrow
\end{array}$$

$$\mathbb{1} \supset \mathbb{1} \Rightarrow \bigcap_0^n \mathbb{K} \ni \mathbb{1} \models \mathbb{1} \xleftarrow[\text{epi-metr}]{\pi} \mathbb{1}$$

$$\overline{\mathbb{1} + \mathbb{1}} = \bigcap_1^{\mathbb{1}} \overline{\mathbb{1} + \mathbb{1}} \text{ halb norm}$$

$$\bigwedge_{\varepsilon}^{>0} \bigvee_i^{\mathbb{1}} \overline{\mathbb{1}} < \overline{\mathbb{1}} + \varepsilon \Rightarrow \mathbb{1} + \mathbb{1} \in \mathbb{1} + \mathbb{1} \Rightarrow \overline{\mathbb{1} + \mathbb{1}} \leq \overline{\mathbb{1} + \mathbb{1}} \leq \overline{\mathbb{1}} + \overline{\mathbb{1}} < \overline{\mathbb{1}} + \overline{\mathbb{1}} + 2\varepsilon$$

$$\overset{\varepsilon}{\Rightarrow}_0 \overline{\mathbb{1} + \mathbb{1}} \leq \overline{\mathbb{1}} + \overline{\mathbb{1}}$$

$$\mathbb{1} \alpha \in \mathbb{1} \alpha \Rightarrow \overline{\mathbb{1} \alpha} \leq \overline{\mathbb{1} \alpha} = \overline{\mathbb{1}} \overline{\alpha} \leq \underbrace{\overline{\mathbb{1}} + \varepsilon} \overline{\alpha} = \overline{\mathbb{1}} \overline{\alpha} + \varepsilon \overline{\alpha}$$

$$\overset{\varepsilon}{\Rightarrow}_0 \overline{\mathbb{1} \alpha} \leq \overline{\mathbb{1}} \overline{\alpha} \stackrel{\alpha \neq 0}{=} \overline{\mathbb{1} \alpha / \alpha} \overline{\alpha} \leq \overline{\mathbb{1} \alpha} \overline{1/\alpha} \overline{\alpha} = \overline{\mathbb{1} \alpha}$$

$$\mathbb{1} \models \mathbb{Z} \text{ treu} \Leftrightarrow \mathbb{1} \supset \mathbb{Z}$$

$$\Rightarrow : \quad \mathbb{Z} \ni \mathbb{1}_n \rightsquigarrow \mathbb{1} \in \mathbb{1} \Rightarrow 0 \rightsquigarrow \overline{\mathbb{1} - \mathbb{1}_n} \geq \bigwedge_{\mathbb{1}}^{\mathbb{Z}} \overline{\mathbb{1} + \mathbb{1}} = \overline{\mathbb{1} + \mathbb{Z}} = 0 \stackrel{\text{treu}}{\Rightarrow} \mathbb{1} + \mathbb{1} = 0 + \mathbb{1} \Rightarrow \mathbb{1} \in \mathbb{Z} \Rightarrow \mathbb{Z} \subset \mathbb{1}$$

$$\begin{aligned} \Leftarrow : \quad 0 = \overline{\mathbb{1} + \mathbb{Z}} &= \bigwedge_{\mathbb{1}}^{\mathbb{Z}} \overline{\mathbb{1} + \mathbb{1}} \Rightarrow \bigvee_{\mathbb{1}_n}^{\mathbb{Z}} \overline{\mathbb{1} + \mathbb{1}_n} \rightsquigarrow 0 \Rightarrow \mathbb{Z} \ni -\mathbb{1}_n \rightsquigarrow \mathbb{1} \\ &\stackrel{\text{abg}}{\Rightarrow} \mathbb{1} \in \mathbb{Z} \Rightarrow \mathbb{1} + \mathbb{Z} = 0 + \mathbb{Z} \Rightarrow \mathbb{1} \models \mathbb{Z} \text{ treu} \end{aligned}$$

$$\mathbb{1} \text{ voll} \Rightarrow \mathbb{1} \models \mathbb{Z} \text{ voll}$$

$$\begin{aligned} \mathbb{1} \models \mathbb{Z} \ni \mathbb{1}_n \text{ summ} \sum_{0 \leq n} \overline{\mathbb{1}_n} < +\infty &\Rightarrow \bigwedge_n \bigvee_{\mathbb{1}_n}^{\mathbb{N}} \overline{\mathbb{1}_n} \leq \overline{\mathbb{1}_n} + 2^{-n} \\ \Rightarrow \sum_{0 \leq n} \overline{\mathbb{1}_n} &\leq \sum_{0 \leq n} \overline{\mathbb{1}_n} + \sum_{0 \leq n} 2^{-n} < 2 + \infty \Rightarrow \mathbb{1} \ni \mathbb{1}_n \text{ summ} \stackrel{\mathbb{1} \text{ voll}}{\Rightarrow} \bigvee \mathbb{1} \ni \mathbb{1} = \sum_{0 \leq n} \mathbb{1}_n \rightsquigarrow_N \sum_n^N \mathbb{1}_n \\ \stackrel{\pi \text{ stet}}{\Rightarrow} \mathbb{1} + \mathbb{1} &\rightsquigarrow_N \overbrace{\sum_n^N \mathbb{1}_n} + \mathbb{1} = \overbrace{\sum_n^N \mathbb{1}_n + \mathbb{1}} = \sum_n^N \mathbb{1}_I \sqcup \mathbb{1} \ni \overbrace{\sum_{0 \leq n} \mathbb{1}_n} + \mathbb{Z} = \sum_{0 \leq n} \mathbb{1}_n \text{ summ} \Rightarrow \mathbb{1} \models \mathbb{Z} \text{ voll} \end{aligned}$$

$$\mathbb{1} \in \overset{\nu}{\underset{0}{\mathbb{N}}} \mathbb{K} \text{ poly-normed}$$

$$\mathbb{1} \supset \mathbb{1} \Rightarrow \text{polynormed } \varprojlim_0 \mathbb{K} \ni \mathbb{1} \models \mathbb{1} \xleftarrow[\text{stet off}]{\pi} \mathbb{1}$$

$$\overline{\mathbb{1} + \mathbb{1}} = \bigwedge_{\mathbb{1}} \overline{\mathbb{1}} \text{ halb norm}$$

$$\mathcal{U} = \frac{\varepsilon \mathbb{1}_Q}{\mathcal{P} \supset Q \text{ fin} : \varepsilon > 0} \text{ stand 0-Umgbasis von } \mathbb{1} \Rightarrow \mathcal{U} \models \mathbb{1} \text{ stand 0-Umgbasis von } \mathbb{1} \models \mathbb{1}$$

$$\bigwedge_U^{\mathcal{U}} U \text{ rund} \Rightarrow U \models \mathbb{1} \text{ rund} \Rightarrow \mathbb{1} \models \mathbb{1} \text{ lic conv}$$

$$\dot{p}_{U \models \mathbb{1}}(\mathbb{1}) = \bigwedge_{\mathbb{1}/\varepsilon \in U \models \mathbb{1}} \frac{\varepsilon > 0}{} = \bigwedge_{\mathbb{1}} p_U(\mathbb{1}) = \bigwedge_{\mathbb{1}} \bigwedge_{\mathbb{1}/\varepsilon \in U} \frac{\varepsilon > 0}{}$$

$$\leqslant : \quad \mathbb{1} \in \mathbb{1} \cap \varepsilon U \Rightarrow \mathbb{1} + \mathbb{1} \in \varepsilon \underline{U \models \mathbb{1}} \Rightarrow \dot{p}_{U \models \mathbb{1}}(\mathbb{1}) \leqslant \varepsilon \xRightarrow{\varepsilon \text{ bel}} \dot{p}_{U \models \mathbb{1}}(\mathbb{1}) \leqslant p_U(\mathbb{1})$$

$$\geqslant : \quad \mathbb{1} \in \varepsilon \underline{U \models \mathbb{1}} \Rightarrow \bigvee_{\mathbb{1}}^{\mathbb{1}} \bigvee_{\mathbb{1}}^U \varepsilon \mathbb{1} + \mathbb{1} = \mathbb{1} + \mathbb{1} \Rightarrow \varepsilon \mathbb{1} \in \mathbb{1} \Rightarrow \bigwedge_{\mathbb{1}} p_U(\mathbb{1}) \leqslant p_U(\varepsilon \mathbb{1}) \leqslant \varepsilon \xRightarrow{\varepsilon \text{ bel}} \bigwedge_{\mathbb{1}} p_U(\mathbb{1}) \dot{p}_{U \models \mathbb{1}}(\mathbb{1})$$

$$\text{metr } \mathbb{1} \supset \mathbb{z} \Rightarrow \mathbb{1} \vDash \mathbb{z} \text{ metr}$$

$$\text{stand 0-Umgbasis } \mathbb{1} \supset U_n = \frac{\mathbb{1} \in \mathbb{1}}{\delta(\mathbb{1}) < 1/n} \overset{\pi_{\text{stet}}^{\text{off}}}{\Rightarrow} U_n \vDash \mathbb{z} \subset \mathbb{1} \vDash \mathbb{z} \text{ stand 0-Umgbasis}$$

$$\dot{\delta}(\mathbb{1}) = \bigwedge_{\mathbb{1}}^{\mathbb{1}} \delta(\mathbb{1})$$

$$U_n \vDash \mathbb{z} = \frac{\mathbb{1} \in \mathbb{1} \vDash \mathbb{z}}{\dot{\delta}(\mathbb{1}) < 1/n}$$

$$\subset : \quad \mathbb{1} \in U_n \vDash \mathbb{z} \Rightarrow \bigvee_{\mathbb{1}}^{U_n} \mathbb{1} \in \mathbb{1} \Rightarrow \delta(\mathbb{1}) < 1/n \Rightarrow \dot{\delta}(\mathbb{1}) \leq \delta(\mathbb{1}) < 1/n$$

$$\supset : \quad \dot{\delta}(\mathbb{1}) < 1/n \Rightarrow \bigvee_{\mathbb{1}}^{\mathbb{1}} \delta(\mathbb{1}) < 1/n \Rightarrow \mathbb{1} \in U_n \Rightarrow \mathbb{1} = \mathbb{1} + \mathbb{z} \in U_n \vDash \mathbb{z}$$

$$\mathbb{1} \wr \mathbb{1} = \dot{\delta}(\mathbb{1} - \mathbb{1}) \text{ erz Top } \mathbb{1} \vDash \mathbb{z}$$

$$\text{voll metr Frech } \mathbb{1} \supset \mathbb{z} \Rightarrow \mathbb{1} \vDash \mathbb{z} \text{ voll metr Frech}$$

$$\mathbb{1} \vDash \mathbb{z} \ni \mathbb{1}_n \overset{\text{Cau}}{\rightsquigarrow} \Rightarrow \bigvee_{\tilde{n} \geq n}^{\text{TF}} \dot{\delta} \left(\mathbb{1}_{\tilde{n+1}} - \mathbb{1}_{\tilde{n}} \right) < 2^{-n} \Rightarrow \bigvee_{\mathbb{1}_{\tilde{0}}}^{\mathbb{1}_0} \bigvee_{\mathbb{1}_{n+1}}^{\mathbb{1}_{\tilde{n+1}} - \mathbb{1}_{\tilde{n}}} \delta(\mathbb{1}_n) < 2^{-n}$$

$$\Rightarrow \sum_{0 \leq j \leq n} \mathbb{1}_j \overset{\text{Cau}}{\rightsquigarrow}_n \Rightarrow \sum_{0 \leq j \leq n} \mathbb{1}_j \rightsquigarrow \mathbb{1} \in \mathbb{1} \text{ voll}$$

$$\Rightarrow \mathbb{1} + \mathbb{z} \rightsquigarrow \overline{\sum_{0 \leq j \leq n} \mathbb{1}_j} + \mathbb{z} = \sum_{0 \leq j \leq n} \overline{\mathbb{1}_j + \mathbb{z}} = \mathbb{1}_{\tilde{0}} + \sum_j^n \overline{\mathbb{1}_{\tilde{j+1}} - \mathbb{1}_{\tilde{j}}} = \mathbb{1}_{\tilde{n}}$$

$$\mathbb{1}_n \text{ Cau konv TF } \Rightarrow \mathbb{1}_n \rightsquigarrow \mathbb{1} + \mathbb{z} \Rightarrow \mathbb{1} \vDash \mathbb{z} \text{ voll}$$

$$\mathbb{z} \subset \mathbb{K}_{\mathbb{1}_0}^{\nabla} \in \mathbb{K}_{\mathbb{0}}^{n/\nu} \text{ coBan/Frech}$$

