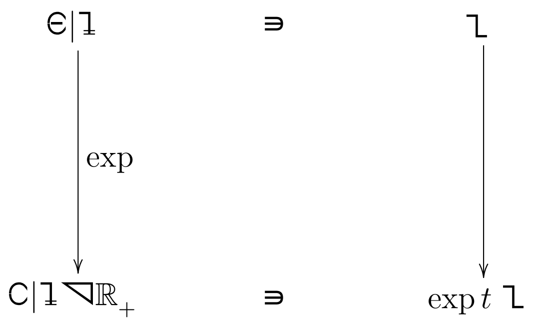
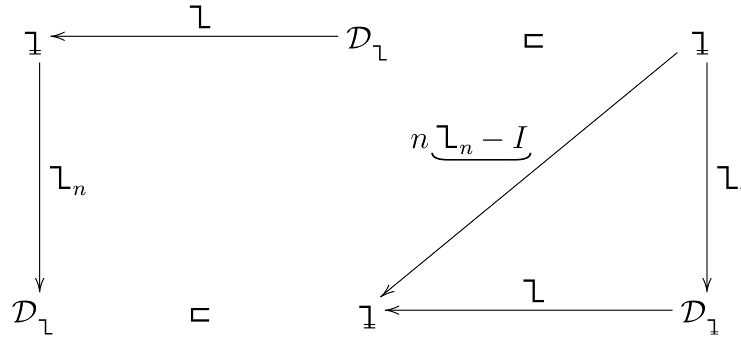



$$\in|\text{⌝} = \frac{\text{⌝} \xleftarrow{\text{⅃}} \mathcal{D}_{\text{⅃}} \sqsubset_{\text{hull}} \text{⌝}}{\bigwedge_{1 \leqslant n} \begin{cases} \text{⌝} \xleftarrow[\text{bij}]{I - \text{⅃}/n} \mathcal{D}_{\text{⅃}} & \mathcal{D}_{\text{⅃}} \xleftarrow[\text{bes}]{\text{⅃}_n = \overbrace{I - \text{⅃}/n}^{-1}} \text{⌝} \\ \bigwedge_{1 \leqslant m} \mathcal{D}_{\text{⅃}} \xleftarrow[\text{equi-bd}]{\text{⅃}_n^m = \overbrace{I - \text{⅃}/n}^{-m}} \text{⌝} & \ulcorner \text{⅃}_n^m \urcorner = \ulcorner \overbrace{I - \text{⅃}/n}^{-m} \urcorner \leqslant C \end{cases}}$$

$$\text{⅃}_n \; \text{⅃} \sqsubset \text{⅃}\,\text{⅃}_n = n \underbrace{\text{⅃}_n - I} \text{ bes}$$




$$\text{⌝} \in \mathcal{D}_{\text{⅃}} \Rightarrow \bigvee_{\text{eind}} \text{1} \in \mathcal{D}_{\text{⅃}} \; \text{⅃}\,\text{⌝} = \left(I - \frac{\text{⅃}}{n}\right) \text{1} = \text{1} - \frac{\text{⅃}\,\text{1}}{n} \Rightarrow \text{1} = \text{⅃}_{\text{⌝}} \; \text{⌝} = \text{⅃} \underbrace{\text{⌝} + \frac{\text{1}}{n}}$$

$$\Rightarrow \left(I - \frac{\text{⅃}}{n}\right) \underbrace{\text{⌝} + \frac{\text{1}}{n}} = \underbrace{\text{⌝} + \frac{\text{1}}{n}} - \frac{1}{n} \text{⅃} \underbrace{\text{⌝} + \frac{\text{1}}{n}} = \text{⌝} + \frac{\text{1}}{n} - \frac{\text{1}}{n} = \text{⌝} \Rightarrow \text{⌝} + \frac{\text{1}}{n} = \text{⅃}_n \; \text{⌝}$$

$$\Rightarrow \text{⅃}\,\text{⅃}_n \; \text{⌝} = \text{⅃} \underbrace{\text{⌝} + \frac{\text{1}}{n}} = \text{1} = \text{⅃}_{\text{⌝}} \; \text{⅃} \; s = n \underbrace{\text{⅃}_n \text{⌝} - \text{⌝}}$$

$$\llcorner_n \underset{\text{strong}}{\rightsquigarrow} I$$

$$\bigwedge_{\urcorner \in \underline{\urcorner}} \llcorner_n \urcorner \underset{\|}{\rightsquigarrow} \urcorner$$

$$\bigwedge_{\varepsilon > 0} \bigvee_{\mathsf{1} \in \mathcal{D}_{\llcorner}} \overline{\|\mathsf{1} - \urcorner\|} \leqslant \varepsilon \Rightarrow \overline{\|\llcorner_n \mathsf{1} - \mathsf{1}\|} = \frac{1}{n} \overline{\|\llcorner_n \llcorner \mathsf{1}\|} \leqslant \frac{1}{n} \overline{\|\llcorner_n\|}\,\overline{\|\llcorner \mathsf{1}\|}$$

$$\Rightarrow \overline{\|\llcorner_n \urcorner - \urcorner\|} \leqslant \overline{\|\llcorner_n \urcorner - \llcorner_n \mathsf{1}\|} + \overline{\|\llcorner_n \mathsf{1} - \mathsf{1}\|} + \overline{\|\mathsf{1} - \urcorner\|} \leqslant \overline{\|\llcorner_n\|}\,\overline{\|\urcorner - \mathsf{1}\|} + \frac{1}{n} \overline{\|\llcorner_n\|}\,\overline{\|\llcorner \mathsf{1}\|} + \overline{\|\mathsf{1} - \urcorner\|}$$

$$\leqslant C \overline{\|\urcorner - \mathsf{1}\|} + \frac{C}{n} \overline{\|\llcorner \mathsf{1}\|} + \overline{\|\urcorner - \mathsf{1}\|} \leqslant (C+1)\,\varepsilon + \frac{C}{n} \overline{\|\llcorner \mathsf{1}\|} \leqslant \underbrace{C+2}\varepsilon$$

$$0 \leqslant t \mapsto e^{t\,\llcorner\,\llcorner_n} \in \mathbb{C}|\underline{\urcorner}$$

$$\overline{\|e^{t\,\llcorner\,\llcorner_n}\|} \leqslant C$$

$$e^{t\,\llcorner\,\llcorner_n} = e^{tn \underbrace{\llcorner_n - I}} = e^{tn \llcorner_n} e^{-tn} = e^{-tn} \sum_{0 \leqslant k} t^{\not{k}}\, n^k\ \llcorner_n^k$$

$$\Rightarrow \overline{\|e^{t\,\llcorner\,\llcorner_n}\|} \leqslant e^{-tn} \overline{\left\| \sum_{0 \leqslant k} t^{\not{k}} n^k \llcorner_n^k \right\|} \leqslant e^{-tn} \sum_{0 \leqslant k} \overline{\|t\|}^{\not{k}}\, n^k\, \overset{\leqslant C}{\overline{\|\llcorner_n^k\|}} \underset{0 \leqslant t}{\leqslant} e^{-tn} \sum_{0 \leqslant k} t^{\not{k}}\, n^k C = e^{-tn} e^{tn} C = C$$

$$\llcorner_n \llcorner_m = \llcorner_m \llcorner_n \Rightarrow \llcorner \llcorner_m\ e^{t\,\llcorner\,\llcorner_n} = e^{t\,\llcorner\,\llcorner_n}\ \llcorner \llcorner_m$$

$$\mathsf{1} \in \mathcal{D}_{\llcorner} \mapsto \partial_t\, e^{t\,\llcorner\,\llcorner_n} \mathsf{1} = \llcorner \llcorner_n\ e^{t\,\llcorner\,\llcorner_n} \mathsf{1} = e^{t\,\llcorner\,\llcorner_n}\ \llcorner \llcorner_n\ \mathsf{1} = e^{t\,\llcorner\,\llcorner_n}\ \llcorner_n \llcorner\ \mathsf{1}$$

$$\llcorner \llcorner_n\ e^{t\,\llcorner\,\llcorner_n} \mathsf{1} = e^{t\,\llcorner\,\llcorner_n}\ \llcorner \llcorner_n\ \mathsf{1}$$

$$\bigwedge_{⅂ \in ⅃} \bigvee ↯^{t} \; ⅃ \underset{||}{\Leftarrow} e^{t\, ꞁ\, ꞁ_n} ⅂$$

$$↿ \in \mathcal{D}_{ꞁ} \Longrightarrow e^{t\, ꞁ\, ꞁ_n} ↿ - e^{t\, ꞁ\, ꞁ_m} ↿ = \int_{ds}^{0|t} \partial_s \, e^{(t-s)\, ꞁ\, ꞁ_m} e^{s\, ꞁ\, ꞁ_n} ↿ = \int_{ds}^{0|t} \partial_s \, e^{(t-s)\, ꞁ\, ꞁ_m} e^{s\, ꞁ\, ꞁ_n} ↿ + e^{(t-s)\, ꞁ\, ꞁ_m} \partial_s \, e^{s\, ꞁ\, ꞁ_n} ↿$$

$$= \int_{ds}^{0|t} - e^{(t-s)\, ꞁ\, ꞁ_m} \; ꞁ\, ꞁ_m \; e^{s\, ꞁ\, ꞁ_n} ↿ + e^{(t-s)\, ꞁ\, ꞁ_m} e^{s\, ꞁ\, ꞁ_n} \; ꞁ\, ꞁ_n \; ↿$$

$$= \int_{ds}^{0|t} e^{(t-s)\, ꞁ\, ꞁ_m} e^{s\, ꞁ\, ꞁ_n} \; ꞁ \; \underbrace{ꞁ_n - ꞁ_m} ↿ = \int_{ds}^{0|t} e^{(t-s)\, ꞁ\, ꞁ_m} e^{s\, ꞁ\, ꞁ_n} \underbrace{ꞁ_n - ꞁ_m} \; ꞁ \; ↿$$

$$\Longrightarrow \overline{e^{t\, ꞁ\, ꞁ_n} ↿ - e^{t\, ꞁ\, ꞁ_m} ↿} = \overline{\int_{ds}^{0|t} e^{(t-s)\, ꞁ\, ꞁ_m} e^{s\, ꞁ\, ꞁ_n} \underbrace{ꞁ_n - ꞁ_m} \; ꞁ \; ↿}$$

$$\leqslant \int_{ds}^{0|t} \overline{e^{(t-s)\, ꞁ\, ꞁ_m}} \; \overline{e^{s\, ꞁ\, ꞁ_n}} \; \overline{\underbrace{ꞁ_n - ꞁ_m} \; ꞁ \; ↿} \leqslant t\, C^2 \, \overline{\underbrace{ꞁ_n - ꞁ_m} \; ꞁ \; ↿}$$

$$⅂ \in ⅃ \Rightarrow \bigvee_{↿ \in \mathcal{D}_{ꞁ}} \overline{⅂ - ↿} \leqslant \delta \Rightarrow \overline{e^{t\, ꞁ\, ꞁ_n} ⅂ - e^{t\, ꞁ\, ꞁ_m} ⅂} \leqslant \overline{e^{t\, ꞁ\, ꞁ_n} (⅂ - ↿) - e^{t\, ꞁ\, ꞁ_m} (⅂ - ↿)} + \overline{e^{t\, ꞁ\, ꞁ_n} ↿ - e^{t\, ꞁ\, ꞁ_m} ↿}$$

$$\leqslant 2C\delta + t\, C^2 \, \overline{\underbrace{ꞁ_n - ꞁ_m} \; ꞁ \; ↿} \leqslant \varepsilon \bigwedge_{0 \leqslant t \leqslant T} \bigwedge_{\ell \leqslant n:m}$$

$$\overset{T}{\underset{0}{◺}} C^{⅂} ⅃ \text{ voll } \Rightarrow \bigvee T \ni t \xrightarrow[\text{stet}]{} ↯^{t} \; ⅂ := \lim_{n \rightsquigarrow \infty} e^{t\, ꞁ\, ꞁ_n} ⅂ \in C^{⅂} ⅃$$

$$\overline{↯^{t} ⅂} \leqslant C^{⅂}$$

$$T \text{ bel } \Rightarrow \mathbb{R}_+ \ni t \xrightarrow[\text{stet}]{} ↯^{t} \; ⅂ := \lim_{n \rightsquigarrow \infty} e^{t\, ꞁ\, ꞁ_n} ⅂ \in C^{⅂} ⅃$$

$$\bigwedge_{0 \leqslant s:t} T^{s+t} = T^{s} T^{t}$$

$$\overline{T^{s+t}x - T^{s}T^{t}x} \leqslant \overline{T^{s+t}x - e^{(s+t)A A_n}x} + \overset{=0}{\overline{e^{(s+t)A A_n}x - e^{s A A_n}e^{t A A_n}x}}$$
$$+ \overline{e^{s A A_n}e^{t A A_n}x - e^{s A A_n}T^{t}x} + \overline{e^{s A A_n}T^{t}x - T^{s}T^{t}x}$$
$$\leqslant \overset{\rightsquigarrow 0}{\overline{T^{s+t}x - e^{(s+t)A A_n}x}} + \overset{\leqslant C}{\overline{e^{s A A_n}}}\,\overset{\rightsquigarrow 0}{\overline{e^{t A A_n}x - T^{t}x}} + \overset{\rightsquigarrow 0}{\overline{\underbrace{e^{s A A_n} - T^{s}}T^{t}x}} \rightsquigarrow 0 \Rightarrow T^{s+t}x = T^{s}T^{t}x$$

$$A \underset{\text{hull}}{\sqsupset} \mathcal{D}_{T} \frac{T^{\varepsilon}x - x}{\varepsilon} \underset{\varepsilon \rightsquigarrow 0}{\sim} T x$$

$$A \sqsubset T$$

$$y \in \mathcal{D}_{A} \Rightarrow \overline{T^{t} A y - e^{t A A_n}A_n A y} \leqslant \overline{\underbrace{T^{t} - e^{t A A_n}}A y} + \overline{e^{t A A_n} A \underbrace{y - A_n s}}$$
$$\leqslant \overset{\rightsquigarrow 0}{\overline{\underbrace{T^{t} - e^{t A A_n}}A y}} + \overset{\leqslant C}{\overline{e^{t A A_n}}}\,\overset{\rightsquigarrow 0}{\overline{A y - A_n A y}}$$
$$\Rightarrow e^{t A A_n} A_n A y \underset{\|}{\rightsquigarrow} T^{t} A y \,\text{glm in}\, t\,(*)$$
$$T^{\varepsilon} y - y \Leftarrow e^{\varepsilon A A_n}y - y = \int_{ds}^{0|\varepsilon} e^{s A A_n} A_n A y \underset{*}{\rightsquigarrow} \int_{ds}^{0|\varepsilon} T^{s} A y$$
$$\Rightarrow \text{ex} \lim_{\varepsilon \rightsquigarrow 0} \frac{T^{\varepsilon}y - y}{\varepsilon} = \lim_{\varepsilon \rightsquigarrow 0} \frac{1}{\varepsilon}\int_{ds}^{0|\varepsilon} T^{s} A y = A y \Rightarrow y \in \mathcal{D}_{T} \wedge T y = A y$$

$$\mathbb{1} \xleftarrow[\text{bij}]{nI - \underline{\text{↯}}} \mathcal{D}_{\underline{\text{↯}}}$$

$$\mathbb{1} \xleftarrow[\text{bij}]{nI - \text{˥}} \mathcal{D}_{\text{˥}} \Rightarrow \mathcal{D}_{\underline{\text{↯}}} = \mathcal{D}_{\text{˥}}$$