$$\forall|\underline{\urcorner} \ni \llcorner = \underbrace{\hat{\llcorner}+I}\,\overbrace{\hat{\llcorner}-I}^{-1}$$

$$\Big\downarrow a$$

$$\mho|\underline{\urcorner} \ni \hat{\llcorner} = \underbrace{\llcorner+I}\,\overbrace{\llcorner-I}^{-1}$$

$$\forall|\underline{\urcorner}: = \frac{\underline{\urcorner} \xleftarrow[\text{lin}]{\llcorner} \mathcal{D}_{\llcorner} \sqsubset_{\text{hull}} \underline{\urcorner}}{\mathcal{G}_{\llcorner} \sqsupset \underline{\urcorner}\times\underline{\urcorner}:\quad \bigwedge_{\urcorner:\hat{\urcorner}\in\mathcal{D}_{\llcorner}} \urcorner\bowtie\underbrace{\llcorner\,\hat{\urcorner}} + \underbrace{\llcorner\,\urcorner}\bowtie\hat{\urcorner} = 0 \Leftrightarrow \llcorner \sqsubset -\overset{*}{\llcorner}}$$

$$\bigwedge_{\urcorner\in\mathcal{D}_{\llcorner}} \|\llcorner\,\urcorner\pm\urcorner\|^2 = \|\llcorner\,\urcorner\|^2 + \|\urcorner\|^2$$

$$\text{LHS} = \underbrace{\llcorner\,\urcorner\pm\urcorner}\bowtie\underbrace{\llcorner\,\urcorner\pm\urcorner} = \underbrace{\llcorner\,\urcorner}\bowtie\underbrace{\llcorner\,\urcorner} + \overbrace{\urcorner\bowtie\underbrace{\llcorner\,\urcorner}+\underbrace{\llcorner\,\urcorner}\bowtie\urcorner}^{=0} + \urcorner\bowtie\urcorner$$

$$\Re_{\llcorner\pm I} \xleftarrow[\text{bij}]{\llcorner\pm I} \mathcal{D}_{\llcorner}$$

$$\left\|(\llcorner\pm I)^{-1}\right\| \leqslant 1$$

$$0 = \underbrace{\llcorner\pm I}\urcorner = \llcorner\,\urcorner\pm\urcorner \underset{\cdot 1}{\Rightarrow} \|\urcorner\|^2 = 0 \Rightarrow \urcorner = 0$$

$$\hat{\urcorner}\in\Re_{\llcorner\pm I} \Rightarrow \bigvee_{\urcorner\in\mathcal{D}_{\llcorner}} \hat{\urcorner} = \llcorner\,\urcorner\pm\urcorner \Rightarrow \left\|(\llcorner\pm I)^{-1}\hat{\urcorner}\right\| = \|\urcorner\| \underset{\cdot 1}{\leqslant} \|\llcorner\,\urcorner\pm\urcorner\| = \|\hat{\urcorner}\|$$

$$\Re_{\hat{\llcorner}} = \Re_{\llcorner+I} \xleftarrow{\llcorner+I} \mathcal{D}_{\llcorner} \xleftarrow{\overbrace{\llcorner-I}^{-1}} \Re_{\llcorner-I}$$

$$\hat{\llcorner} = \underbrace{\llcorner+I}\,\overbrace{\llcorner-I}^{-1}$$

$$\Re_{\llcorner - I} \ni \hat{\urcorner} = \llcorner\,\urcorner - \urcorner$$

$$\urcorner \in \mathcal{D}_{\llcorner} \Rightarrow \hat{\llcorner}\ \hat{\urcorner} = \llcorner\,\urcorner + \urcorner$$

$$\hat{\llcorner}\ \text{monometric}\ \ulcorner\hat{\llcorner}\hat{\urcorner}\urcorner = \ulcorner\hat{\urcorner}\urcorner$$

$$\ulcorner\hat{\llcorner}\mathsf{1}\urcorner^2 = \ulcorner\llcorner\,\urcorner + \urcorner\urcorner^2 = \ulcorner\llcorner\,\urcorner - \urcorner\urcorner^2 = \ulcorner\mathsf{1}\urcorner^2$$

$$\mathcal{G}_{\hat{\llcorner}} \sqsubset \daleth \times \daleth$$

$$\mathcal{G}_{\hat{\llcorner}} \ni \mathsf{1}_n : \hat{\llcorner}\ \mathsf{1}_n \rightsquigarrow \mathsf{1}{:}\urcorner \in \daleth \times \daleth \Rightarrow \lrcorner \Leftarrow \mathsf{1}_n = \llcorner\ \urcorner_n - \urcorner_n$$

$$\urcorner_n \in \mathcal{D}_{\llcorner}$$

$$\lrcorner \Leftarrow \hat{\llcorner}\ \mathsf{1}_n = \llcorner\ \urcorner_n + \urcorner_n \Rightarrow \llcorner\ \urcorner_n \rightsquigarrow \frac{\urcorner + \mathsf{1}}{2}$$

$$\urcorner_n \rightsquigarrow \frac{\urcorner - \mathsf{1}}{2} \underset{\mathcal{G}_{\llcorner}\ \text{abg}}{\Longrightarrow} \frac{\urcorner - \mathsf{1}}{2} \in \mathcal{D}_{\llcorner}$$

$$\llcorner\ \frac{\urcorner - \mathsf{1}}{2} = \frac{\urcorner + \mathsf{1}}{2} \Rightarrow \mathsf{1} = \underbrace{\llcorner - I}\frac{\urcorner - \mathsf{1}}{2} \in \mathcal{D}_{\hat{\llcorner}}$$

$$\hat{\llcorner}\ \mathsf{1} = \underbrace{\llcorner + I}\frac{\urcorner - \mathsf{1}}{2} = \urcorner \Rightarrow \mathsf{1}{:}\urcorner \in \mathcal{G}_{\hat{\llcorner}}\ \text{abg}$$

$$\text{defect spaces}\ \mathcal{D}^{\perp}_{\hat{\llcorner}} = \frac{\mathsf{1} \in \mathcal{D}_{\overset{*}{\llcorner}}}{\overset{*}{\llcorner}\mathsf{1} = \mathsf{1}}\ \Re^{\perp}_{\hat{\llcorner}} = \frac{\urcorner \in \mathcal{D}_{\overset{*}{\llcorner}}}{\overset{*}{\llcorner}\urcorner = -\urcorner}$$

$$\mathsf{1} \in \mathcal{D}^{\perp}_{\hat{\llcorner}} = \Re^{\llcorner}_{\underbrace{\llcorner - I}} \Rightarrow \bigwedge_{\urcorner \in \mathcal{D}_{\llcorner}} 0 = \mathsf{1}\bowtie\overbrace{\underbrace{\llcorner - I}\urcorner} = \mathsf{1}\bowtie\underbrace{\llcorner\ \urcorner - \urcorner} = \mathsf{1}\bowtie\underbrace{\llcorner\ \urcorner} - \mathsf{1}\bowtie\urcorner \Leftrightarrow \bigwedge_{\urcorner \in \mathcal{D}_{\llcorner}} \mathsf{1}\bowtie\underbrace{\llcorner\ \urcorner} = \mathsf{1}\bowtie\lrcorner \Rightarrow \mathsf{1} \in \mathcal{D}_{\overset{*}{\llcorner}}$$

$$\overset{*}{\llcorner}\ \mathsf{1} = \mathsf{1}$$

$$\urcorner \in \Re^{\perp}_{\hat{\llcorner}} = \Re^{\llcorner}_{\underbrace{\llcorner + I}} \Rightarrow \bigwedge_{\urcorner \in \mathcal{D}_{\llcorner}} 0 = \urcorner\bowtie\overbrace{\underbrace{\llcorner + I}\urcorner} = \urcorner\bowtie\underbrace{\llcorner\ \urcorner - \urcorner} = \urcorner\bowtie\underbrace{\llcorner\ \urcorner} + \urcorner\bowtie\urcorner \Leftrightarrow \bigwedge_{\urcorner \in \mathcal{D}_{\llcorner}} \urcorner\bowtie\underbrace{\llcorner\ \urcorner} = -\urcorner\bowtie\lrcorner \Rightarrow \urcorner \in \mathcal{D}_{\overset{*}{\llcorner}}$$

$$\overset{*}{\llcorner}\ \urcorner = -\urcorner$$

$$\mathcal{D}_{\hat{\llcorner}} \sqsubset \daleth \sqsupset \Re_{\hat{\llcorner}}$$

$$\mathcal{D}_{\hat{\llcorner}} \ni \mathsf{1}_n \rightsquigarrow \mathsf{1} \in \daleth \underset{\text{Cau}}{\Longrightarrow} 0 \leftsquigarrow \ulcorner\mathsf{1}_m - \mathsf{1}_n\urcorner = \ulcorner\hat{\llcorner}\underbrace{\mathsf{1}_m - \mathsf{1}_n}\urcorner = \ulcorner\hat{\llcorner}\mathsf{1}_m - \hat{\llcorner}\mathsf{1}_n\urcorner\ \text{Cau}$$

$$\Rightarrow \mathcal{G}_{\hat{\llcorner}} \ni \mathsf{1}_n : \hat{\llcorner}\ \mathsf{1}_n \rightsquigarrow \mathsf{1}{:}\urcorner \in \mathcal{G}_{\hat{\llcorner}}\ \text{abg} \Rightarrow \mathsf{1} \in \mathcal{D}_{\hat{\llcorner}}$$

$$ᒣ = \hat{ᒪ}\ ɿ$$

$$\Re_{\hat{ᒪ}} \ni ᒣ_n \rightsquigarrow ᒣ \in ɟ \Rightarrow ᒣ_n = \hat{ᒪ}\ ɿ_n$$

$$ɿ_n \in \mathcal{D}_{\hat{ᒪ}}$$

$$\underset{\text{Cau}}{\Rightarrow}\ 0 \leftsquigarrow \ulcorner\overline{ᒣ_m - ᒣ_n}\urcorner = \ulcorner\overline{\hat{ᒪ}\underbrace{ɿ_m - ɿ_n}}\urcorner = \ulcorner\overline{ɿ_m - ɿ_n}\urcorner\ \text{Cau}\ \Rightarrow \mathcal{G}_{\hat{ᒪ}} \ni ɿ_n : ᒣ_n \rightsquigarrow ɿ : ᒣ \in \mathcal{G}_{\hat{ᒪ}}\ \text{abg}\ \Rightarrow ɿ \in \mathcal{D}_{\hat{ᒪ}}$$

$$ᒣ = \hat{ᒪ}\ ɿ \in \Re_{\hat{ᒪ}}$$

$$ɟ = \mathcal{D}_{\hat{ᒪ}} \times \mathcal{D}_{\hat{ᒪ}}^{\perp} = \Re_{ᒪ - I} \times \left\{ \overset{*}{ᒪ} ɿ = ɿ \right\} = \Re_{\hat{ᒪ}} \times \Re_{\hat{ᒪ}}^{\perp} = \Re_{ᒪ + I} \times \left\{ \overset{*}{ᒪ} ᒣ = -ᒣ \right\}$$

$$\mathcal{D}_{\overset{*}{ᒪ}} = \mathcal{D}_{ᒪ} \times \mathcal{D}_{\hat{ᒪ}}^{\perp} \times \Re_{\hat{ᒪ}}^{\perp}$$

$$\overset{*}{ᒪ} = \begin{bmatrix} -ᒪ & 0 & 0 \\ 0 & I & 0 \\ 0 & 0 & -I \end{bmatrix}$$

$$\text{Ex}\ 𝟙 \in \mathcal{D}_{\overset{*}{ᒪ}} \Rightarrow \bigvee ᒣ \in \mathcal{D}_{ᒪ} \sqsubset \mathcal{D}_{\overset{*}{ᒪ}} \ni ɿ\ \overset{*}{ᒪ}\ ɿ = ɿ$$

$$\underbrace{I + \overset{*}{ᒪ}}𝟙 = \underbrace{I - ᒪ}ᒣ + ɿ = \underbrace{I + \overset{*}{ᒪ}}ᒣ + ɿ \Rightarrow \underbrace{I + \overset{*}{ᒪ}}\frac{ɿ}{2} = ɿ = \underbrace{I + \overset{*}{ᒪ}}\underbrace{𝟙 - ᒣ} \Rightarrow \underbrace{I + \overset{*}{ᒪ}}\underbrace{𝟙 - ᒣ - \frac{ɿ}{2}} = 0 \Rightarrow ᒣ = -\ \overset{*}{ᒪ}\ ᒣ \in \Re_{\hat{ᒪ}}^{\perp}$$

$$\Rightarrow \mathcal{D}_{\overset{*}{ᒪ}} \ni 𝟙 = ᒣ + \frac{ɿ}{2} + ᒣ \in \mathcal{D}_{ᒪ} + \mathcal{D}_{\hat{ᒪ}}^{\perp} + \Re_{\hat{ᒪ}}^{\perp}$$

$$\overset{*}{ᒪ}\ 𝟙 = -\ ᒪ\ ᒣ + \frac{ɿ}{2} - ᒣ$$

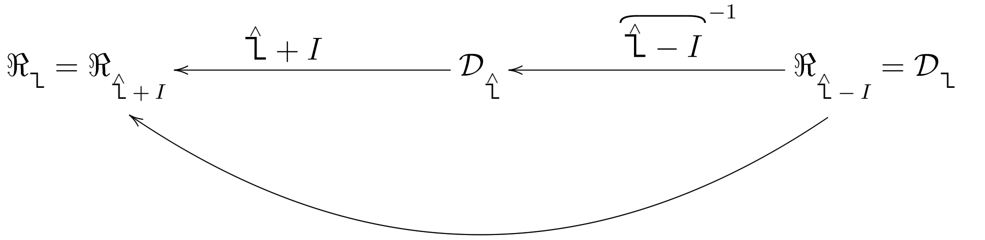
$$\text{Eind}\ 0 = ᒣ + \frac{ɿ}{2} + ᒣ \Rightarrow 0 = \underbrace{I + \overset{*}{ᒪ}}\underbrace{ᒣ + \frac{ɿ}{2} + ᒣ} = ᒣ + \frac{ɿ}{2} + ᒣ - ᒪ\ ᒣ + \frac{ɿ}{2} - ᒣ = \underbrace{ᒣ - ᒪ\ ᒣ} + ɿ \in \mathcal{D}_{\hat{ᒪ}} \times \mathcal{D}_{\hat{ᒪ}}^{\perp}$$

$$\Rightarrow \underbrace{I - ᒪ}ᒣ = 0 = ɿ \underset{I - ᒪ\ \text{inj}}{\Rightarrow} ᒣ = 0 \Rightarrow ᒣ = 0$$

$$\overset{*}{ᒪ} = -\ ᒪ \Leftrightarrow \hat{ᒪ} \in \mho|ɟ\ \text{unitary}$$

$$ɟ \underset{\text{hull}}{\sqsupset} \Re_{\underbrace{\hat{ᒪ} - I}} = \mathcal{D}_{ᒪ} \xleftarrow[\text{bij}]{\hat{ᒪ} - I} \Re_{ᒪ - I} = \mathcal{D}_{\hat{ᒪ}}$$

$$\hat{ᒪ} \in \mho|ɟ$$



$$\llcorner = \underbrace{\hat{\llcorner} + I}\,\overbrace{\hat{\llcorner} - I}^{-1}$$

$$1 \in \mathcal{D}_{\hat{\llcorner}} \Rightarrow 1 = \llcorner\,\urcorner - \urcorner$$

$$\urcorner \in \mathcal{D}_{\llcorner} \Rightarrow \underbrace{\hat{\llcorner} - I}1 = \hat{\llcorner}\;1 - 1 = \underbrace{\llcorner\,\urcorner + \urcorner} - \underbrace{\llcorner_{\urcorner} - \urcorner} = 2\urcorner \Rightarrow \Re_{\hat{\llcorner} - I} = \mathcal{D}_{\llcorner}$$

$$\underbrace{\hat{\llcorner} - I}1 = 0 \Rightarrow \urcorner = 0 \Rightarrow 1 = \llcorner\,\urcorner - \urcorner = 0 \text{ inj}$$

$$\underbrace{\hat{\llcorner} + I}\,\overbrace{\hat{\llcorner} - I}^{-1}\urcorner = \underbrace{\hat{\llcorner} + I}\frac{1}{2} = \frac{\hat{\llcorner}1 + 1}{2} = \frac{\llcorner\,\urcorner + \urcorner + \llcorner\,\urcorner - \urcorner}{2} = \llcorner\,\urcorner$$