$$\urcorner \underset{\mathbb{L}}{\bowtie} \acute{\urcorner} = \mathbb{L} \underbrace{\urcorner^{*} \acute{\urcorner}} \text{ pos semi-form}$$

$$^{\mathbb{L}}\ulcorner \urcorner \urcorner = \overbrace{\urcorner \underset{\mathbb{L}}{\bowtie} \urcorner}^{1/2} = \overbrace{\mathbb{L} \underbrace{\urcorner^{*} \urcorner}}^{1/2} \text{ semi-norm}$$

$$\mathbb{1} \underset{\tilde{\mathbb{L}}}{\bowtie} \sqsubset_{\text{hull}} \mathbb{1} \times \mathbb{K}$$

$$\bigvee_{u_i \in \overline{\mathbb{1}}} \mathbb{L}\, u_i \rightsquigarrow \ulcorner \mathbb{L} \urcorner \Rightarrow \ulcorner \mathbb{L} \urcorner \leftsquigarrow \mathbb{L}\, u_i \leqslant \ulcorner \mathbb{L} \urcorner^{1/2}\, {}^{\mathbb{L}}\overline{u_i} = \ulcorner \mathbb{L} \urcorner^{1/2}\, \overbrace{\mathbb{L}\, \underbrace{u_i^{*} u_i}}^{1/2} \underset{\overline{u_i^{*} u_i} \leqslant 1}{\leqslant} \ulcorner \mathbb{L} \urcorner^{1/2}\, \ulcorner \mathbb{L} \urcorner^{1/2} = \ulcorner \mathbb{L} \urcorner \Rightarrow {}^{\mathbb{L}}\overline{u_i} \rightsquigarrow \ulcorner \mathbb{L} \urcorner^{1/2}$$

$$\Rightarrow {}^{\tilde{\mathbb{L}}}\overline{u_i - e}^{2} = \tilde{\mathbb{L}}\, \overbrace{\underbrace{u_i - e}^{*} \underbrace{u_i - e}} = \mathbb{L}\, \underbrace{u_i^{*} u_i} - \mathbb{L}\, u_i - \mathbb{L}\, u_i^{*} + \ulcorner \mathbb{L} \urcorner =$$

$${}^{\mathbb{L}}\overline{u_i}^{2} - \mathbb{L}\, u_i - \overbrace{\mathbb{L} u_i}^{*} + \ulcorner \mathbb{L} \urcorner \rightsquigarrow \ulcorner \mathbb{L} \urcorner - \ulcorner \mathbb{L} \urcorner - \ulcorner \mathbb{L} \urcorner + \ulcorner \mathbb{L} \urcorner = 0 \Rightarrow \mathbb{1} \ni u_i \underset{\tilde{\mathbb{L}}}{\rightsquigarrow} e$$

$$\mathbb{I}_{\mathbb{L}} : \alpha_{\mathbb{L}} : e_{\mathbb{L}} \text{ cycl*-rep}$$

$$N_{\mathbb{L}} = \begin{cases} \daleth \in \mathbb{I} \\ \daleth \underset{\mathbb{L}}{\ast} \daleth = 0 \end{cases} = \begin{cases} \daleth \in \mathbb{I} \\ \daleth \underset{\mathbb{L}}{\ast} \mathbb{I} = 0 \end{cases} \underset{\text{lin}}{\sqsubset} \mathbb{I}$$

$$\bigwedge_{\urcorner}^{\mathbb{I}} \bigwedge_{\daleth}^{N_{\mathbb{L}}} \underbrace{\urcorner\daleth} \underset{\mathbb{L}}{\ast} \underbrace{\urcorner\daleth} = \mathbb{L}\underbrace{\daleth^{*}\urcorner^{*}\urcorner\daleth} = \daleth \underset{\mathbb{L}}{\ast} \underbrace{\urcorner^{*}\urcorner\daleth} = 0 \Rightarrow \urcorner\daleth \in N_{\mathbb{L}} = \mathbb{I}\, N_{\mathbb{L}} \text{ left ideal}$$

$$\overbrace{\urcorner + N_{\mathbb{L}}} \ast \overbrace{\urcorner' + N_{\mathbb{L}}} = \urcorner \underset{\mathbb{L}}{\ast} \urcorner' \Rightarrow \mathbb{I} \ulcorner N_{\mathbb{L}} \text{ pre-Hilb}$$

$$\ell_{\urcorner} \overbrace{\urcorner' + N_{\mathbb{L}}} = \urcorner\urcorner' + N_{\mathbb{L}} \Rightarrow \mathbb{I} \ulcorner N_{\mathbb{L}} \xleftarrow[\text{contr *-rep}]{\ell_{\urcorner}} \mathbb{I} \ulcorner N_{\mathbb{L}}$$

$$\ell_{\urcorner\urcorner'} = \ell_{\urcorner} \ell_{\urcorner'}$$

$$\underbrace{\ell_{\urcorner}\overbrace{\urcorner' + N_{\mathbb{L}}}} \ast \overbrace{\urcorner'' + N_{\mathbb{L}}} = \overbrace{\urcorner\urcorner' + N_{\mathbb{L}}} \ast \overbrace{\urcorner'' + N_{\mathbb{L}}} = \underbrace{\urcorner\urcorner'} \underset{\mathbb{L}}{\ast} \urcorner'' = \mathbb{L}\,\overbrace{\underbrace{\urcorner\urcorner'}}^{*}\urcorner'' = \mathbb{L}\underbrace{\urcorner'^{*}\urcorner^{*}\urcorner''}$$

$$= \urcorner'' \underset{\mathbb{L}}{\ast} \underbrace{\urcorner^{*}\urcorner''} = \overbrace{\urcorner' + N_{\mathbb{L}}} \ast \overbrace{\urcorner^{*}\urcorner'' + N_{\mathbb{L}}} = \overbrace{\urcorner' + N_{\mathbb{L}}} \ast \underbrace{\ell_{\urcorner^{*}} \overbrace{\urcorner'' + N_{\mathbb{L}}}} \Rightarrow \ell_{\urcorner}^{*} = \ell_{\urcorner^{*}}$$

$${}^{\mathbb{L}}\ulcorner \underbrace{\ell_{\urcorner}\urcorner' + N_{\mathbb{L}}} \urcorner^{2} = \underbrace{\urcorner\urcorner'} \underset{\mathbb{L}}{\ast} \underbrace{\urcorner\urcorner'} = \mathbb{L}\underbrace{\urcorner'^{*}\urcorner^{*}\urcorner\urcorner'} \leqslant \mathbb{L}\underbrace{\urcorner'^{*}\urcorner'}\ulcorner\urcorner^{*}\urcorner\urcorner \leqslant {}^{\mathbb{L}}\ulcorner \urcorner' + N_{\mathbb{L}} \urcorner^{2} \ulcorner\urcorner\urcorner^{2} \Rightarrow \ulcorner\ell_{\urcorner}\urcorner \leqslant \ulcorner\urcorner\urcorner$$

$$\mathbb{I} \overset{\triangle}{\vDash} N_{\mathbb{L}} = \overline{\mathbb{I} \ulcorner N_{\mathbb{L}}}^{-} \text{ voll Hilb } \Rightarrow {}^{\alpha}\urcorner = \bar{\ell}_{\urcorner}$$

$$\mathbb{I} \xrightarrow[\text{contr *-hom}]{\alpha} \mho | \mathbb{I} \overset{\triangle}{\vDash} N_{\mathbb{L}}$$

$$\mathbb{I} \ni u_{i} \underset{\tilde{\mathbb{L}}\ \text{hull}}{\rightsquigarrow} e \in \tilde{\mathbb{I}} \Rightarrow \tilde{\mathbb{L}} \text{ Cauchy } u_{i} + N_{\mathbb{L}} \rightsquigarrow e_{\mathbb{L}} \in \mathbb{I} \overset{\triangle}{\vDash} N_{\mathbb{L}}$$

$$\alpha(\mathbb{I})\, e_{\mathbb{L}} = \mathbb{I} + N_{\mathbb{L}} \underset{\text{hull}}{\sqsubset} \mathbb{I} \overset{\triangle}{\vDash} N_{\mathbb{L}} \Rightarrow \text{ cyclic}$$

$$\alpha_{e_{\mathbb{L}}} \urcorner = e_{\mathbb{L}} \ast \underbrace{{}^{\iota}\urcorner e_{\mathbb{L}}} = e_{\mathbb{L}} \ast \overbrace{\urcorner + N_{\mathbb{L}}} \backsim \overbrace{u_{i} + N_{\mathbb{L}}} \ast \overbrace{\urcorner + N_{\mathbb{L}}} = \mathbb{L}\,\overbrace{u_{i}\urcorner} \rightsquigarrow \mathbb{L}\urcorner \Rightarrow \alpha_{e_{\mathbb{L}}} = \mathbb{L}$$