

$$\mathbb{H} \xleftarrow[\mathrm{hom}]{\mathbb{L}} \mathbb{C}|\mathbb{I}:\quad \mathbb{H} \models \mathbb{I} \leftarrow \mathbb{I}$$

$$\mathbb{I} \bowtie \mathbb{H} \begin{smallmatrix} \mathbb{H} \\ \triangleleft^\varepsilon \\ 0 \end{smallmatrix} \mathbb{C} \xleftarrow{\left\{ \begin{smallmatrix} \lrcorner \\ \lrcorner \end{smallmatrix} \right\}} \mathbb{I}$$

$$\left\{ \begin{array}{l} \text{left act} \\ \text{right act} \end{array} \right.$$

$$\lrcorner^t \mathbb{I} = t^- \bowtie \mathbb{I}$$

$$\lrcorner^t \mathbb{I} = t \bowtie \mathbb{I}$$

$$\begin{aligned}
{}^{s:t}\lrcorner\gamma &= {}^{ts}\gamma \text{ bi-mult} \Rightarrow \lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} = {}_{\imath\mathbf{x}\lrcorner}\widehat{\lrcorner\gamma} \\
{}^{s:t}\lrcorner\gamma &= {}^{st}\gamma \text{ bi-mult} \Rightarrow \lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} = {}_{\imath\mathbf{x}\models}\widehat{\lrcorner\gamma}
\end{aligned}$$

$$\begin{aligned}
\lrcorner\gamma &= \gamma_i \mathbf{x} \gamma^i \Rightarrow t^- \ltimes \gamma = \lrcorner\gamma = \gamma_i {}^t\gamma^i \\
\lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} &= \lrcorner\gamma_i \mathbf{x} \gamma^i \Rightarrow \lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} = \lrcorner\gamma_i {}^t\gamma^i = \widehat{\lrcorner\gamma_i {}^t\gamma^i} = \widehat{\lrcorner t^- \ltimes \gamma} \\
\Rightarrow \lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} &= \lrcorner \overline{s t^- \ltimes \gamma} = s^- \ltimes \underbrace{t^- \ltimes \gamma} = \overline{ts} \ltimes \gamma = \gamma_i {}^{ts}\gamma^i = \overline{\gamma_i \mathbf{x} \lrcorner\gamma^i} = {}^{s:t}\widehat{\lrcorner\gamma} = {}_{\imath\mathbf{x}\lrcorner}\widehat{\lrcorner\gamma} \\
\lrcorner\gamma &= \gamma_i \mathbf{x} \gamma^i \Rightarrow t \ltimes \gamma = \lrcorner\gamma = \gamma_i {}^t\gamma^i \\
\lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} &= \lrcorner\gamma_i \mathbf{x} \gamma^i \Rightarrow \lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} = \lrcorner\gamma_i {}^t\gamma^i = \widehat{\lrcorner\gamma_i {}^t\gamma^i} = \widehat{\lrcorner t \ltimes \gamma} \\
\Rightarrow \lrcorner_{\mathbf{x}1}\widehat{\lrcorner\gamma} &= \lrcorner \overline{s t \ltimes \gamma} = s \ltimes \underbrace{t \ltimes \gamma} = \overline{st} \ltimes \gamma = \gamma_i {}^{st}\gamma^i = \overline{\gamma_i \mathbf{x} \lrcorner\gamma^i} = {}^{s:t}\widehat{\lrcorner\gamma} = {}_{\imath\mathbf{x}\models}\widehat{\lrcorner\gamma}
\end{aligned}$$

$$\begin{array}{ccc}
\mathbb{1}\mathbf{x} \begin{array}{c} \mathbb{H} \\ \omega \\ \triangle_0 \end{array} \mathbb{C} & \xleftarrow{\begin{array}{c} \left\{ \begin{array}{c} \lrcorner \\ \lrcorner \end{array} \right\} \\ \left\{ \begin{array}{c} \text{left act} \\ \text{right act} \end{array} \right\} \end{array}} & \mathbb{1} \\
\downarrow \begin{array}{c} \left\{ \begin{array}{c} \lrcorner \mathbf{x} 1 \\ \lrcorner \mathbf{x} 1 \end{array} \right\} \end{array} & & \downarrow \begin{array}{c} \left\{ \begin{array}{c} \lrcorner \\ \lrcorner \end{array} \right\} \end{array} \\
\mathbb{1}\mathbf{x} \begin{array}{c} \mathbb{H} \\ \omega \\ \triangle_0 \end{array} \mathbb{C} \mathbf{x} \begin{array}{c} \mathbb{H} \\ \omega \\ \triangle_0 \end{array} \mathbb{C} & \xleftarrow{\begin{array}{c} \left\{ \begin{array}{c} \imath\mathbf{x}\lrcorner \\ \imath\mathbf{x}\models \end{array} \right\} \end{array}} & \mathbb{1}\mathbf{x} \begin{array}{c} \mathbb{H} \\ \omega \\ \triangle_0 \end{array} \mathbb{C}
\end{array}$$