

$$\mathcal{B}_H^C = \overset{*}{T}^C \mathcal{T}_H^C = H$$

$$\mathcal{L} = \text{id} \Rightarrow \overset{*}{T}^C \mathcal{T}_H^C = H \overset{*}{T}_{\text{id}}^C = H$$

$$\overset{*}{T}^{\mathbb{R}} \underbrace{\mathcal{T}_H^C}_{\mathcal{J}} = \underline{\varrho H} \overset{*}{T}_{\mathcal{J}}^{\mathbb{R}}$$

$$\# \overset{*}{T}_{\mathcal{L}}^C = \overset{*}{T}_{\mathcal{L}I}^{\mathbb{R}}$$

$$\# \underline{H\mathcal{J}} = \underline{\varrho H} \# \mathcal{J} \Rightarrow \# H = \varrho H$$

$$\mathcal{J} = \overset{*}{T}_{\mathcal{L}}^C$$

$$\# \underline{H \overset{*}{T}_{\mathcal{L}}^C} = \# \underline{\overset{*}{T}^C \mathcal{T}_H^C \mathcal{L}} = \overset{*}{T}^{\mathbb{R}} \underbrace{\mathcal{T}_H^C \mathcal{L} I}_{\mathcal{J}} = \overset{*}{T}^{\mathbb{R}} \underbrace{\mathcal{T}_H^C \mathcal{L} I}_{\mathcal{J}} = \underline{\varrho H} \overset{*}{T}_{\mathcal{L}I}^{\mathbb{R}} = \underline{\varrho H} \# \overset{*}{T}_{\mathcal{L}}^C$$

$$\# \bar{H} = \mathcal{B}^{\mathbb{R}} \underline{\varrho \bar{H}}$$

$$\bar{H} = \overline{\overset{*}{T}^C \mathcal{T}_H^C} = \overset{*}{T}^C \mathcal{T}_{\bar{H}}^C$$

$$\text{LHS} = \# \left(\overset{*}{T}^C \mathcal{T}_{\bar{H}}^C \right) = \overset{*}{T}^{\mathbb{R}} \underbrace{\mathcal{T}_{\bar{H}}^C I}_{\mathcal{J}} = \underbrace{\overset{*}{T}^{\mathbb{R}} \mathbb{1}^{\mathbb{R}} \overset{-1}{T}^{\mathbb{R}} \mathcal{T}_{\bar{H}}^C I}_{\mathcal{J}} = \underbrace{\overset{*}{T}^{\mathbb{R}} \mathbb{1}^{\mathbb{R}} \overset{-1}{T}^{\mathbb{R}} \mathcal{T}_{\bar{H}}^C I}_{\mathcal{J}}$$

$$\begin{array}{ccc}
D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{8} \\ \text{C} \end{array} & \xleftarrow{\mathcal{T}^{\mathbb{C}}} & D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{C} \end{array} \\
\downarrow L_{\mathcal{T}_{\bar{H}}^{\mathbb{C}}} & & \downarrow M_{\bar{H}} \\
D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{8} \\ \text{C} \end{array} & \xleftarrow{\mathcal{T}^{\mathbb{C}}} & D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{C} \end{array} \\
\downarrow I & & \downarrow * \\
D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{8} \\ \text{C} \end{array} & \xleftarrow{\mathcal{T}^{\mathbb{R}}} & D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{C} \end{array} \\
\downarrow \mathcal{T}_{\bar{H}}^{\mathbb{C}} & & \downarrow M_{\varrho\bar{H}} \\
D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{8} \\ \text{C} \end{array} & \xleftarrow{\mathcal{T}^{\mathbb{R}}} & D^{\mathbb{C}} \begin{array}{c} \triangleleft \\ \text{2} \\ \text{C} \end{array}
\end{array}$$