$$\check{\alpha} \bigcirc \iota_x^t = \alpha_x^{\check{\alpha} t}$$

$$y \neq a \Longrightarrow \underbrace{\check{\alpha} \bigcirc \iota_x^t} y = \check{\alpha}\, y = \alpha y = \alpha_x^{\check{\alpha} t}\, y$$

$$\underbrace{\check{\alpha} \bigcirc \iota_x^t} x = \check{\alpha}\, t = \alpha_x^{\check{\alpha} t}\, t$$

$$\alpha_y^u \bigcirc \iota_x^y = \alpha_x^u \text{ auf } X \llcorner y$$

$$y \neq g \neq a \Longrightarrow \underbrace{\alpha_y^u \bigcirc \iota_x^y} z = \alpha_y^u \underbrace{\iota_x^y z} = \alpha_y^u \underbrace{\iota z} = \alpha_y^u z = \alpha z = \alpha_x^u z$$

$$y \neq g = x \Longrightarrow \underbrace{\alpha_y^u \bigcirc \iota_x^y} x = \alpha_y^u \underbrace{\iota_x^y x} = \alpha_y^u y = u = \alpha_x^u x$$

$$T \in \overline{\overline{\overline{\mathcal{P}\overline{O \cup X}}}} \text{ ableitbar } \overline{T} = 1 \underset{\text{Satz}}{\overset{\text{Kons}}{\Longrightarrow}} \hat{T} = 1$$

$$\overline{\overline{\mathcal{P}\overline{O \cup X}}} \subset \frac{T \in \overline{\overline{\mathcal{P}\overline{O \cup X}}}}{\bigwedge \alpha \in U^X: \quad \hat{\alpha} T = 1} \underset{\text{abg}}{\subset} \overline{\mathcal{P}\overline{O \cup X}}$$

$$\hat{\alpha}\, \overline{\bigwedge_x \bar{A}} = 1 - \hat{\alpha}\, \overbrace{\bigwedge_x \bar{A}} = 1 - \bigwedge_u \underbrace{\hat{\alpha}^u_x \bar{A}} = \bigvee_u \underbrace{1 - \hat{\alpha}^u_x \bar{A}} = \bigvee_u \underbrace{\hat{\alpha}^u_x A} = \hat{\alpha}\, \overbrace{\bigvee_x A} \Rightarrow \hat{\alpha}\, \underbrace{\bigvee_x A \rightarrow \overline{\bigwedge_x \bar{A}}} = 1 = \hat{\alpha}\, \underbrace{\overline{\bigwedge_x \bar{A}} \rightarrow \bigvee_x A}$$

$$\hat{\alpha}\, \overbrace{\iota^t_x \bigcirc A} = \overbrace{\check{\alpha} \bigcirc \iota^t_x}^{\wedge} A = \hat{\alpha}^{\check{\alpha} t}_x A \underset{u = \check{\alpha} t}{\geqslant} \bigwedge_u \underbrace{\hat{\alpha}^u_x A} = \hat{\alpha}\, \overbrace{\bigwedge_x A} \Rightarrow \hat{\alpha}\, \underbrace{\overbrace{\bigwedge_x A} \rightarrow \overbrace{\iota^t_x \bigcirc A}} = 1$$

$$\hat{T} = 1 \underset{\text{zz}}{\Rightarrow} \overbrace{\gamma \bigcirc T}^{\wedge} = 1$$

$$\hat{\alpha}\, \underbrace{\gamma \bigcirc T} = \overbrace{\check{\alpha} \bigcirc \gamma}^{\wedge} T \underset{\text{Ind}}{=} 1$$

$$x \neq y \notin |A| \cup |B| \begin{cases} \overbrace{A \rightarrow \underbrace{\iota^y_x \bigcirc B}}^{\wedge} = 1 \\ \hat{A} \leqslant \overbrace{\iota^y_x \bigcirc B}^{\wedge} \end{cases} \underset{\text{zz}}{\Rightarrow} \begin{cases} \overbrace{A \rightarrow \underbrace{\bigwedge_x B}}^{\wedge} = 1 \\ \hat{A} \leqslant \overbrace{\bigwedge_x B}^{\wedge} \end{cases}$$

$$\lightning \bigvee_\alpha \begin{cases} \hat{\alpha} A = 1 \\ 0 = \hat{\alpha}\, \overbrace{\bigwedge_x B} = \bigwedge_u \underbrace{\hat{\alpha}^u_x B} \end{cases} \Rightarrow \bigvee_u \hat{\alpha}^u_x B = 0$$

$$y \notin |A| \Rightarrow \alpha^u_y \underset{|A|}{\sim} \alpha \underset{\text{Trg}}{\Rightarrow} \hat{\alpha}^u_y A = \hat{\alpha} A = 1 \underset{\text{Ind}}{\Rightarrow} \hat{\alpha}^u_y \underbrace{\iota^y_x \bigcirc B} = 1$$

$$y \notin |B| \Rightarrow \alpha^u_x \underset{|B|}{\sim} \alpha^u_y \bigcirc \iota^y_x = \check{\alpha}^u_y \bigcirc \iota^y_x \underset{\text{Trg}}{\Rightarrow} \hat{\alpha}^u_x B = \overbrace{\check{\alpha}^u_y \bigcirc \iota^y_x}^{\wedge} B = \hat{\alpha}^u_y \underbrace{\iota^y_x \bigcirc B} = 1 \lightning$$

$$\hat{T} = 1 \overset{\text{Voll}}{\underset{\text{Satz}}{\Longrightarrow}} \begin{cases} \ulcorner T \urcorner = 1 \\ T \in \overline{\overline{\overline{\mathcal{P}O \cup X}}} \text{ ableitbar} \end{cases}$$

$$\ulcorner T \urcorner \neq 1 \Rightarrow T \notin \overline{\overline{\overline{\mathcal{P}O \cup X}}}: \quad x{:}A \text{ abz}$$

$$\underset{\text{Tars}}{\Longrightarrow} \bigvee \overline{\overline{\overline{\mathcal{P}O \cup X}}} / \sim \xrightarrow[\text{hom}]{\chi} 2: \quad \begin{cases} \chi \ulcorner T \urcorner = 0 \\ \chi \overline{\bigwedge_x A} \underset{\text{inf}}{=} \bigwedge_{t \neq a} \chi \overline{\iota_x^t \bigcirc A} \\ \chi \overline{\bigvee_x A} \underset{\text{sup}}{=} \bigvee_{t \neq a} \chi \overline{\iota_x^t \bigcirc A} \end{cases}$$

$$\text{relations } P_m = \frac{t_1{:}\cdots{:}t_m \in \overline{O \cup X}^m}{\chi \overline{p_m t_1 \cdots t_m} \neq 0} \subset \overline{O \cup X}^m \Rightarrow \text{ char function } \hat{P}_m t_1 \cdots t_m = \chi \overline{p_m t_1 \cdots t_m}$$

$$\hat{\iota} A = \chi \ulcorner A \urcorner$$

$$\text{Ind rg } A \geqslant 0: \quad \text{rg } A = 0 \Rightarrow A = p_m t_1 \cdots t_m: \quad \text{rg } = n > 0 \underset{\text{Pea}}{\Longrightarrow} \begin{cases} \neg A \\ \sharp AB \\ \sharp_x A \end{cases} : \quad \text{rg } A\text{: rg } B < n$$

$$\begin{cases} \hat{\iota}\, \underbrace{p_m t_1 \cdots t_m} = \hat{P}_m t_1 \cdots t_m = \chi \overline{p_m t_1 \cdots t_m} \\ \hat{\iota}\, \underbrace{A \sharp B} = \underbrace{\hat{\iota} A \sharp \hat{\iota} B} \underset{\text{Ind}}{=} \underbrace{\chi \ulcorner A \urcorner \sharp \chi \ulcorner B \urcorner} = \chi \underbrace{\ulcorner A \urcorner \sharp \ulcorner B \urcorner} = \chi \overline{A \sharp B} \\ \hat{\iota}\, \underbrace{\neg A} = 1 - \hat{\iota} A \underset{\text{Ind}}{=} 1 - \chi \ulcorner A \urcorner = \chi \overline{\neg A} \\ \hat{\iota}\, \overbrace{\sharp_x A} = \sharp_t \underbrace{\hat{\iota}_x^t A} \underset{\text{Sub}}{=} \sharp_t \overbrace{\hat{\iota}\, \iota_x^t \bigcirc A} \underset{\text{Ind}}{=} \sharp_t \underbrace{\chi \overline{\gamma_x^t \bigcirc A}} = \chi \underbrace{\sharp_t \overline{\gamma_x^t \bigcirc A}} \underset{\text{Tar}}{=} \chi \overline{\sharp_x A} \end{cases}$$

$$\text{da rg } \iota_x^t \bigcirc A = \text{ rg } A$$

$$\hat{\iota}_x^t A = \chi \overline{\iota_x^t \bigcirc A}$$

$$\hat{\iota}_x^t A \underset{\text{Sub}}{=} \hat{\iota}\, \underbrace{\iota_x^t \bigcirc A} = \chi \overline{\iota_x^t \bigcirc A}$$

$$\lightning\ \hat{T} = 1 \Rightarrow \hat{\iota}_x^t T = 1 \Rightarrow 1 = \bigwedge_{t \neq a} \hat{\iota}_x^t T = \bigwedge_{t \neq a} \underbrace{\chi \overline{\iota_x^t \bigcirc T}} = \chi \bigwedge_{t \neq a} \overline{\iota_x^t \bigcirc T} \underset{\text{Tar}}{=} \chi \overline{\bigwedge_x T} \Rightarrow \chi \overline{\bigwedge_x T} = 1$$

$$\overbrace{\bigwedge_x T} \underset{R_0}{\longrightarrow} \overbrace{\iota_x^t \bigcirc T} \underset{t = x}{\Longrightarrow} \overbrace{\bigwedge_x T} \underset{R_0}{\longrightarrow} \overbrace{\iota_x^x \bigcirc T} = A \Rightarrow \overline{\bigwedge_x T} \leqslant \ulcorner T \urcorner \Rightarrow 1 = \chi \overline{\bigwedge_x T} \leqslant \chi \ulcorner T \urcorner = 0\ \lightning$$