

LKの公理と推論規則

- 公理

$$\frac{}{A \vdash A} \quad (\text{I})$$

$$\frac{}{\vdash \top} \quad (\top)$$

$$\frac{}{\perp \vdash} \quad (\perp)$$

- 構造に関する推論規則

$$\frac{\Gamma \vdash \Delta}{A, \Gamma \vdash \Delta} \quad (\text{WL})$$

$$\frac{\Gamma \vdash \Delta}{\Gamma \vdash \Delta, A} \quad (\text{WR})$$

$$\frac{A, A, \Gamma \vdash \Delta}{A, \Gamma \vdash \Delta} \quad (\text{CL})$$

$$\frac{\Gamma \vdash \Delta, A, A}{\Gamma \vdash \Delta, A} \quad (\text{CR})$$

$$\frac{\Gamma_1, A, B, \Gamma_2 \vdash \Delta}{\Gamma_1, B, A, \Gamma_2 \vdash \Delta} \quad (\text{EL})$$

$$\frac{\Gamma \vdash \Delta_1, A, B, \Delta_2}{\Gamma \vdash \Delta_1, B, A, \Delta_2} \quad (\text{ER})$$

$$\frac{\Gamma_1 \vdash \Delta_1, A \quad A, \Gamma_2 \vdash \Delta_2}{\Gamma_1, \Gamma_2 \vdash \Delta_1, \Delta_2} \quad (\text{Cut})$$

(ここで Γ, Δ は論理式の列)

- 論理結合子に関する推論規則

$$\frac{A, \Gamma \vdash \Delta}{A \wedge B, \Gamma \vdash \Delta} \quad (\wedge L_1)$$

$$\frac{\Gamma \vdash \Delta, A}{\Gamma \vdash \Delta, A \vee B} \quad (\vee R_1)$$

$$\frac{B, \Gamma \vdash \Delta}{A \wedge B, \Gamma \vdash \Delta} \quad (\wedge L_2)$$

$$\frac{\Gamma \vdash \Delta, B}{\Gamma \vdash \Delta, A \vee B} \quad (\vee R_2)$$

$$\frac{A, \Gamma_1 \vdash \Delta_1 \quad B, \Gamma_2 \vdash \Delta_2}{A \vee B, \Gamma_1, \Gamma_2 \vdash \Delta_1, \Delta_2} \quad (\vee L)$$

$$\frac{\Gamma_1 \vdash \Delta_1, A \quad \Gamma_2 \vdash \Delta_2, B}{\Gamma_1, \Gamma_2 \vdash \Delta_1, \Delta_2, A \wedge B} \quad (\wedge R)$$

$$\frac{\Gamma_1 \vdash \Delta_1, A \quad B, \Gamma_2 \vdash \Delta_2}{A \rightarrow B, \Gamma_1, \Gamma_2 \vdash \Delta_1, \Delta_2} \quad (\rightarrow L)$$

$$\frac{A, \Gamma \vdash \Delta, B}{\Gamma \vdash \Delta, A \rightarrow B} \quad (\rightarrow R)$$

$$\frac{\Gamma \vdash \Delta, A}{\neg A, \Gamma \vdash \Delta} \quad (\neg L)$$

$$\frac{A, \Gamma \vdash \Delta}{\Gamma \vdash \Delta, \neg A} \quad (\neg R)$$

(ここで Γ, Δ は論理式の列)