Linear Logic Anki Study Document

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Def. $\otimes L$

$$\frac{\Delta, A, B \vdash C}{\Delta, A \otimes B \vdash C}\otimes L$$

Def. $\otimes R$

$$\frac{\Delta \vdash A \quad \Delta' \vdash B}{\Delta, \Delta' \vdash A \otimes B}\otimes R$$

Def. id_A

$$\frac{}{A \vdash A}\, id_A$$

Def. cut_A

$$\frac{\Delta \vdash A \quad \Delta', A \vdash C}{\Delta, \Delta' \vdash C}\, cut_A$$

Def. $\multimap L$

$$\frac{\Delta \vdash A \quad \Delta', B \vdash C}{\Delta, \Delta' \multimap B \vdash C}\multimap L$$

Def. $\multimap R$

$$\frac{\Delta, A \vdash B}{\Delta \vdash A \multimap B}\multimap R$$

What is Harmony?

Successful cut reduction and identity expansion on a connective.

Def. $1R$

$$\frac{}{\cdot \vdash 1}\, 1R$$

Def. $1L$

$$\frac{\Delta \vdash C}{\Delta, 1 \vdash C}\, 1L$$

Def. $\& R$

$$\frac{\Delta \vdash A \quad \Delta \vdash B}{\Delta \vdash A \& B}\& R$$

Def. $\& L$

$$\frac{\Delta, A \vdash C}{\Delta, A \& B \vdash C}\& L_1$$

$$\frac{\Delta, B \vdash C}{\Delta, A \& B \vdash C}\& L_2$$

Names for $A \& B$

1. A with B
2. alternative conjunction
3. additive conjunction

Def. $\top R$

$$\frac{}{\Delta \vdash \top}\top R$$

Def. $\oplus R_1$

$$\frac{\Delta \vdash A}{\Delta \vdash A \oplus B}\oplus R_1$$

$$\frac{\Delta \vdash B}{\Delta \vdash A \oplus B}\oplus R_2$$

Def. $\oplus L$

$$\frac{\Delta, A \vdash C \quad \Delta, B \vdash C}{\Delta, A \otimes B \vdash C}\oplus L$$

Def. $0L$

$$\frac{}{\Delta, 0 \vdash C}\, 0L$$

Def. copy

$$\frac{\Gamma, A \text{ pers}; \Delta, A \text{ eph} \vdash C \text{ eph}}{\Gamma, A \text{ pers}; \Delta \vdash C \text{ eph}}\text{copy}$$

Def. cut'_A (pers.)

$$\frac{\Gamma; \cdot \vdash A \text{ eph} \quad \Gamma, A \text{ pers}; \Delta \vdash C \text{ eph}}{\Gamma; \Delta \vdash C \text{ eph}}\, cut'_A$$

Def. $!L$

$$\frac{\Gamma, A \text{ pers}; \Delta \vdash C \text{ eph}}{\Gamma; \Delta, !A \text{ eph} \vdash C \text{ eph}}\, !L$$

Def. $!R$

$$\frac{\Gamma; \cdot \vdash A \text{ eph}}{\Gamma; \cdot \vdash !A \text{ eph}}\, \text{!R}$$