## Inference Rules of G4ip (LJT)

$$\frac{}{A, \Gamma \vdash A}\ \mathit{Axiom} \qquad (A \text{ being atomic}) \qquad\qquad \frac{}{\mathit{false}, \Gamma \vdash G}\ \mathit{false}\text{-L}$$

$$\frac{B, C, \Gamma \vdash G}{B \& C, \Gamma \vdash G}\ \&\text{-L} \qquad\qquad \frac{\Gamma \vdash B \quad \Gamma \vdash C}{\Gamma \vdash B \& C}\ \&\text{-R}$$

$$\frac{B, \Gamma \vdash G \quad C, \Gamma \vdash G}{B \vee C, \Gamma \vdash G}\ \vee\text{-L} \qquad \frac{\Gamma \vdash B}{\Gamma \vdash B \vee C}\ \vee\text{-R}_1 \qquad \frac{\Gamma \vdash C}{\Gamma \vdash B \vee C}\ \vee\text{-R}_2$$

$$\frac{B, A, \Gamma \vdash G}{A \text{->} B, A, \Gamma \vdash G}\ \text{->-L}_1 \qquad (A \text{ being atomic}) \qquad\qquad \frac{B, \Gamma \vdash C}{\Gamma \vdash B \text{->} C}\ \text{->-R}$$

$$\frac{C \text{->} (D \text{->} B) \Gamma \vdash G}{(C \& D) \text{->} B, \Gamma \vdash G}\ \text{->-L}_2$$

$$\frac{C \text{->} B, D \text{->} B, \Gamma \vdash G}{(C \vee D) \text{->} B \Gamma \vdash G}\ \text{->-L}_3$$

$$\frac{D \text{->} B, \Gamma \vdash C \text{->} D \quad B, \Gamma \vdash G}{(C \text{->} D) \text{->} B \Gamma \vdash G}\ \text{->-L}_4$$

$B \text{<->} C$ is defined as $B \text{->} C \& C \text{->} B$

Figure 1: Inference rules for G4ip; see for example [Dyckhoff, 1992].

[Dyckhoff, 1992] Dyckhoff, R. Contraction-Free Sequent Calculi for Intuitionistic Logic. *Journal of Symbolic Logic*, 57(3):795–807.