Mode-Correctness of Bidirectional Typing

In synthesis mode, the information flow starts from the first premise

$$\frac{\Gamma, x : A \vdash t :^{\leftarrow} B}{\Gamma \vdash \lambda x . t :^{\leftarrow} A \supset B} ABS^{\leftarrow} \qquad \frac{\Gamma \vdash t :^{\Rightarrow} Int \supset Bool}{\Gamma \vdash t u :^{\Rightarrow}} \qquad \Gamma \vdash u :^{\leftarrow}}{\Gamma \vdash t u :^{\Rightarrow}} APP^{\Rightarrow}$$

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