Mode-Correctness of Bidirectional Typing

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

$$\frac{\Gamma, x : A \vdash t :^{\Leftarrow} B}{\Gamma \vdash \lambda x.t :^{\Leftarrow} A \supset B} \text{ABS}^{\Leftarrow}$$

$$\frac{\Gamma \vdash t :^{\Rightarrow} \texttt{Int} \supset \texttt{Bool} \qquad \Gamma \vdash u :^{\Leftarrow} \texttt{Int}}{\Gamma \vdash t\, u :^{\Rightarrow}} \text{APP}^{\Rightarrow}$$

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