Hazel Phi: 9-type-aliases

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SYNTAX

BinOp	$\oplus$	$::=$	$\times \mid + \mid \rightarrow$
Kind	κ	$::=$	$\texttt{Type} \mid \texttt{KHole} \mid \texttt{S}_{\kappa}(\tau) \mid \Pi_{t::\kappa_1}.\kappa_2$
Base Types	$\texttt{bse}$	$::=$	$\texttt{Int} \mid \texttt{Float} \mid \texttt{Bool}$
User Types	$\hat{\tau}$	$::=$	$t \mid \texttt{bse} \mid \hat{\tau_1} \oplus \hat{\tau_2} \mid (\!\!\mid\!\!)^{\mathtt{u}} \mid (\!\mid \hat{\tau} \mid\!)^{\mathtt{u}} \mid \lambda t::\texttt{Type}.\hat{\tau} \mid \hat{\tau_1}\ \hat{\tau_2}$
Internal Types	$\hat{\tau}$	$::=$	$t \mid \texttt{bse} \mid \tau_1 \oplus \tau_2 \mid (\!\!\mid\!\!)^{\mathtt{u}} \mid (\!\mid \tau \mid\!)^{\mathtt{u}} \mid \lambda t::\kappa.\tau \mid \tau_1\ \tau_2$
Type Pattern			
User Expression			
Internal Expression			

DECLARATIVES

$\boxed{\Delta;\Phi \vdash \kappa_1 \lesssim \kappa_2}$ κ_1 is a consistent subkind of κ_2

$$\frac{}{\Delta;\Phi \vdash \texttt{KHole} \lesssim \kappa} \qquad \frac{}{\Delta;\Phi \vdash \kappa \lesssim \texttt{KHole}} \qquad \frac{\Delta;\Phi \vdash \kappa_1 \equiv \kappa_2}{\Delta;\Phi \vdash \kappa_1 \lesssim \kappa_2} \qquad \frac{\Delta;\Phi \vdash \tau::\kappa}{\Delta;\Phi \vdash \texttt{S}_{\kappa}(\tau) \lesssim \kappa}$$

$\boxed{\Delta;\Phi \vdash \kappa_1 \equiv \kappa_2}$ κ_1 is equivalent to κ_2

$$\frac{}{\Delta;\Phi \vdash \kappa \equiv \kappa} \qquad \frac{\Delta;\Phi \vdash \kappa_2 \equiv \kappa_1}{\Delta;\Phi \vdash \kappa_1 \equiv \kappa_2} \qquad \frac{\Delta;\Phi \vdash \kappa_1 \equiv \kappa_3 \qquad \Delta;\Phi \vdash \kappa_3 \equiv \kappa_2}{\Delta;\Phi \vdash \kappa_1 \equiv \kappa_2}$$

$$\frac{\Delta;\Phi \vdash \tau_1 \overset{\kappa}{\equiv} \tau_2}{\Delta;\Phi \vdash \texttt{S}_{\kappa}(\tau_1) \equiv \texttt{S}_{\kappa}(\tau_2)} \qquad \frac{\Delta;\Phi \vdash \tau::\texttt{S}_{\kappa}(\tau_1)}{\Delta;\Phi \vdash \texttt{S}_{\texttt{S}_{\kappa}(\tau_1)}(\tau) \equiv \texttt{S}_{\kappa}(\tau_1)} \qquad \frac{\Delta;\Phi \vdash \tau::\Pi_{t::\kappa_1}.\kappa_2}{\Delta;\Phi \vdash \texttt{S}_{\Pi_{t::\kappa_1}.\kappa_2}(\tau) \equiv \Pi_{t::\kappa_1}.\texttt{S}_{\kappa_2}(\tau\ t)}$$

$\boxed{\Delta;\Phi \vdash \tau_1 \overset{\kappa}{\equiv} \tau_2}$ τ_1 is equivalent to τ_2 at kind κ

$$\frac{\Delta;\Phi \vdash \tau::\kappa}{\Delta;\Phi \vdash \tau \overset{\kappa}{\equiv} \tau}$$

$\boxed{\Delta; \Phi \vdash \tau_1 \equiv \tau_2}$ τ_1 is equivalent to τ_2 at "top" kind

$$\frac{\Delta; \Phi \vdash \tau_1 \overset{\kappa}{\equiv} \tau_2}{\Delta; \Phi \vdash \tau_1 \equiv \tau_2}$$