termvar, x, y, d	Term-level variable			
label, l	::=			Label
mode, m	::=			Mode
	|	$\_$		Placeholder for any mode
	|	L		Local
	|	F		Foreign
	|	G		Global
	|	$\mathsf{max\_mode}(\Gamma)$		
	|	$\mathsf{if}\ \mathsf{mode\_cond}\ \mathsf{then}\ m_3\ \mathsf{else}\ m_4$		
mode_cond	::=			Mode statement
	|	$m_1 = m_2$		
	|	$m_1 \leq m_2$		
	|	$m \in \mathsf{suprmodes}(\Gamma)$		
	|	$\exists m \in \mathsf{suprmodes}(\Gamma)$		
type, A, B	::=			Type
	|	1		Unit
	|	$A_1 \oplus A_2$		Sum
	|	$A_1 \otimes A_2$		Product
	|	$A_1 \ltimes A_2$		Ampar type (consuming A_1 yields A_2
	|	${}_{m_1}A_1 \multimap A_2$		Linear function
	|	$A^{\perp}$		Destination
	|	(A)	S	
dynamic_value, v	::=			Dynamic value
	|	l		Hole
	|	$@l$		Destination
	|	$()$		Unit
	|	$\mathsf{Inl}\ v$		Left variant for sum
	|	$\mathsf{Inr}\ v$		Right variant for sum
	|	$\langle v_1 , v_2 \rangle$		Product
	|	$\langle v_1 \,;\, v_2 \rangle$		Ampar (v_2 is the root of the structur
	|	$\lambda x . t$		Linear function
	|	(v)	S	
term, t, u	::=			Term
	|	v		Dynamic value
	|	x		Variable
	|	$t\ u$		Application
	|	$t\ ;\ u$		Pattern-match on unit
	|	$\mathsf{case}\ t\ \mathsf{of}\ \{ \mathsf{Inl}\, x_1 \mapsto u_1 , \mathsf{Inr}\, x_2 \mapsto u_2 \}$		Pattern-match on sum
	|	$\mathsf{case}\ t\ \mathsf{of}\ \{ \langle x_1 , x_2 \rangle \mapsto u \}$		Pattern-match on product
	|	$\mathsf{mapL}\ t\ \mathsf{with}\ \{ x \mapsto u \}$		Map over the left side of the ampar
	|	$\mathsf{to}_{\ltimes}$		Wrap t into a trivial ampar
	|	$\mathsf{from}_{\ltimes}$		Extract value from trivial ampar
	|	alloc		Return a fresh "identity" ampar obje
	|	$t \triangleleft ()$		Fill destination with unit
	|	$t \triangleleft \mathsf{Inl}$		Fill destination with left variant
	|	$t \triangleleft \mathsf{Inr}$		Fill destination with right variant

	|	$\mathsf{t} \triangleleft \langle,\rangle$		Fill destination with product constructor
	|	$\mathsf{t} \triangleleft \cdot\, \mathsf{u}$		Fill destination with root of ampar u
	|	(t)	S	
	|	$\mathsf{t}[\mathsf{e}]$	M	
sub	::=			variable or label substitution
	|	$\mathsf{x} \mapsto \mathsf{v}$		
subs	::=			variable or substitutions
	|	sub		
	|	sub, subs		
effect, e	::=			
	|	ε		empty effect
	|	subs		
type_affect, ta	::=			type affectation
	|	$\mathsf{x} :_{\mathsf{m}} \mathsf{A}$		
	|	$+l : \mathsf{A}$		Hole
	|	$-l : \mathsf{A}$		Destination
type_affects	::=			type affectations
	|	ta		
	|	ta, type_affects		
typing_context, $\mho$, Γ	::=			typing context
	|	$\{\}$		
	|	$\{$type_affects$\}$		
	|	$\Gamma_1 \sqcup \Gamma_2$		
	|	$\Gamma_1 \uplus \Gamma_2$		
	|	$\Gamma[\mathsf{m}_1 \mapsto \mathsf{m}_2]$		
terminals	::=			
	|	$\multimap$		
	|	$\ltimes$		
	|	$\mapsto$		
	|	$()$		
	|	Inl		
	|	Inr		
	|	$\langle,\rangle$		
	|	$\odot$		
	|	$\triangleleft$		
	|	$\triangleleft\cdot$		
	|	$;$		
	|	$\sqcup$		
	|	$\uplus$		
	|	$\{\}$		
	|	$\exists$		
	|	$\neq$		

	|	$\leq$
	|	$\in$
	|	$\notin$
	|	$\subset$
	|	$\mathcal{N}$
	|	$\vdash$
	|	$\longrightarrow$
	|	$\rightsquigarrow$
formula	::=	
	|	judgement
Ctx	::=	
	|	$x \in \mathcal{N}(\Gamma)$
	|	$l \in \mathcal{N}(\Gamma)$
	|	$x \notin \mathcal{N}(\Gamma)$
	|	$l \notin \mathcal{N}(\Gamma)$
	|	fresh x
	|	fresh l
	|	type_affect $\in \Gamma$
	|	mode_cond
Eq	::=	
	|	$A_1 = A_2$
	|	$A_1 \neq A_2$
	|	$t = u$
	|	$t \neq u$
	|	$\Gamma_1 = \Gamma_2$
	|	$\mathcal{N}(\Gamma_1) \cap \mathcal{N}(\Gamma_2) = \emptyset$
Ty	::=	
	|	$\Gamma \vdash t : A$
judgement	::=	
	|	Ctx
	|	Eq
	|	Ty
user_syntax	::=	
	|	termvar
	|	*label*
	|	mode
	|	mode_cond
	|	type
	|	dynamic_value
	|	term
	|	sub
	|	subs
	|	effect

| type_affect
| type_affects
| typing_context
| terminals

$\boxed{x \in \mathcal{N}(\Gamma)}$

$\boxed{l \in \mathcal{N}(\Gamma)}$

$\boxed{x \notin \mathcal{N}(\Gamma)}$

$\boxed{l \notin \mathcal{N}(\Gamma)}$

$\boxed{\mathsf{fresh}\ x}$

$\boxed{\mathsf{fresh}\ l}$

$\boxed{\mathsf{type\_affect} \in \Gamma}$

$\boxed{\mathsf{mode\_cond}}$

$\boxed{A_1 = A_2}$

$\boxed{A_1 \neq A_2}$

$\boxed{t = u}$

$\boxed{t \neq u}$

$\boxed{\Gamma_1 = \Gamma_2}$

$\boxed{\mathcal{N}(\Gamma_1) \cap \mathcal{N}(\Gamma_2) = \emptyset}$

$\boxed{\Gamma \vdash t : A}$

$$\frac{}{\{+l : A\} \vdash l : A} \quad \text{TyTerm\_Hole}$$

$$\frac{}{\{-l : A\} \vdash @l : A^{\perp}} \quad \text{TyTerm\_Dest}$$

$$\frac{}{\{\} \vdash () : 1} \quad \text{TyTerm\_Unit}$$

$$\frac{\Gamma \vdash v : A_1}{\Gamma \vdash \mathsf{Inl}\, v : A_1 \oplus A_2} \quad \text{TyTerm\_Inl}$$

$$\frac{\Gamma \vdash v : A_2}{\Gamma \vdash \mathsf{Inr}\, v : A_1 \oplus A_2} \quad \text{TyTerm\_Inr}$$

$$\frac{\begin{array}{c}\Gamma_1 \vdash v_1 : A_1 \\ \Gamma_2 \vdash v_2 : A_2\end{array}}{\Gamma_1 \sqcup \Gamma_2 \vdash \langle v_1 , v_2 \rangle : A_1 \otimes A_2} \quad \text{TyTerm\_Prod}$$

$$\frac{\begin{array}{c}\Gamma_1 \vdash v_1 : A_1 \\ \Gamma_2 \vdash v_2 : A_2 \\ \Gamma_3 = \Gamma_1 \uplus \Gamma_2\end{array}}{\Gamma_3 \vdash \langle v_1 \mathbin{,} v_2 \rangle : A_1 \rtimes A_2} \quad \text{TyTerm\_Ampar}$$

$$\frac{\Gamma \sqcup \{x :_{m_1} A_1\} \vdash t : A_2}{\Gamma \vdash \lambda x . t :_{m_1} A_1 \multimap A_2} \quad \text{TyTerm\_Lambda}$$

$$\frac{\begin{array}{c}\Gamma_1 \vdash t :_{m_1} A_1 \multimap A_2 \\ \Gamma_2 \vdash u : A_1 \\ m_1 \in \mathsf{suprmodes}(\Gamma_2)\end{array}}{\Gamma_1 \sqcup \Gamma_2 \vdash t\, u : A_2} \quad \text{TyTerm\_App}$$

$$\frac{\Gamma_1 \vdash t : 1 \quad \Gamma_2 \vdash u : B}{\Gamma_1 \sqcup \Gamma_2 \vdash t\ ;\ u : B} \quad \textsc{TyTerm\_PatUnit}$$

$$\frac{\Gamma_1 \vdash t : A_1 \oplus A_2 \quad \exists\, m \in \mathsf{suprmodes}(\Gamma_1) \quad \Gamma_2 \sqcup \{x_1 :_m A_1\} \vdash u_1 : B \quad \Gamma_2 \sqcup \{x_2 :_m A_2\} \vdash u_2 : B}{\Gamma_1 \sqcup \Gamma_2 \vdash \mathsf{case}\ t\ \mathsf{of}\ \{\mathsf{Inl}\, x_1 \mapsto u_1,\ \mathsf{Inr}\, x_2 \mapsto u_2\} : B} \quad \textsc{TyTerm\_PatSum}$$

$$\frac{\Gamma_1 \vdash t : A_1 \otimes A_2 \quad \exists\, m \in \mathsf{suprmodes}(\Gamma_1) \quad \Gamma_2 \sqcup \{x_1 :_m A_1, x_2 :_m A_2\} \vdash u : B}{\Gamma_1 \sqcup \Gamma_2 \vdash \mathsf{case}\ t\ \mathsf{of}\ \{\langle x_1, x_2\rangle \mapsto u\} : B} \quad \textsc{TyTerm\_PatProd}$$

$$\frac{\Gamma_1 \vdash t : A_1 \rtimes A_2 \quad \exists\, m' \in \mathsf{suprmodes}(\Gamma_1 \sqcup \Gamma_2) \quad m = \mathsf{if}\ \mathsf{F} \in \mathsf{suprmodes}(\Gamma_1)\ \mathsf{then}\ \mathsf{F}\ \mathsf{else}\ \mathsf{L} \quad \Gamma_2[\mathsf{L} \mapsto \mathsf{F}] \sqcup \{x :_m A_1\} \vdash u : B}{\Gamma_1 \sqcup \Gamma_2 \vdash \mathsf{mapL}\ t\ \mathsf{with}\ \{x \mapsto u\} : B \rtimes A_2} \quad \textsc{TyTerm\_MapAmpar}$$

$$\frac{}{\{\} \vdash \mathsf{alloc} : A^{\perp} \rtimes A} \quad \textsc{TyTerm\_Alloc}$$

$$\frac{\Gamma \vdash t : A}{\Gamma \vdash \mathsf{to}_{\rtimes} : 1 \rtimes A} \quad \textsc{TyTerm\_ToAmpar}$$

$$\frac{\Gamma \vdash t : 1 \rtimes A}{\Gamma \vdash \mathsf{from}_{\rtimes} : A} \quad \textsc{TyTerm\_FromAmpar}$$

$$\frac{\Gamma \vdash t : 1^{\perp}}{\Gamma \vdash t \triangleleft () : 1} \quad \textsc{TyTerm\_FillUnit}$$

$$\frac{\Gamma \vdash t : (A_1 \oplus A_2)^{\perp}}{\Gamma \vdash t \triangleleft \mathsf{Inl} : {A_1}^{\perp}} \quad \textsc{TyTerm\_FillInl}$$

$$\frac{\Gamma \vdash t : (A_1 \oplus A_2)^{\perp}}{\Gamma \vdash t \triangleleft \mathsf{Inr} : {A_2}^{\perp}} \quad \textsc{TyTerm\_FillInr}$$

$$\frac{\Gamma \vdash t : (A_1 \otimes A_2)^{\perp}}{\Gamma \vdash t \triangleleft \langle,\rangle : {A_1}^{\perp} \otimes {A_2}^{\perp}} \quad \textsc{TyTerm\_FillProd}$$

$$\frac{\Gamma_1 \vdash t : {A_2}^{\perp} \quad \Gamma_2 \vdash u : A_1 \rtimes A_2 \quad \mathsf{L} \in \mathsf{suprmodes}(\Gamma_1) \quad \mathsf{F} \in \mathsf{suprmodes}(\Gamma_2)}{\Gamma_1 \sqcup \Gamma_2 \vdash t \triangleleft \cdot\, u : A_1} \quad \textsc{TyTerm\_FillCompL}$$

$$\frac{\Gamma_1 \vdash t : {A_2}^{\perp} \quad \Gamma_2 \vdash u : A_1 \rtimes A_2 \quad \mathsf{F} \in \mathsf{suprmodes}(\Gamma_1) \quad \mathsf{G} \in \mathsf{suprmodes}(\Gamma_2)}{\Gamma_1 \sqcup \Gamma_2 \vdash t \triangleleft \cdot\, u : A_1} \quad \textsc{TyTerm\_FillCompF}$$

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Definition rules:         22 good     0 bad
Definition rule clauses:  60 good     0 bad
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