$termvar, \alpha, \beta, \gamma, \mathcal{L}, x, y, z, f, g, h, adv$
$index, i, j, n, m$

Foc	::=			Focusing phase
	|	A		Async
	|	S		Sync
t, v	::=			Terms
	|	$t_1\ t_2$		Application
	|	$\mathbf{let}\ \langle p \rangle \leftarrow t_1\ \mathbf{in}\ t_2$		Effectful Let Binding
	|	$\mathbf{case}\ t\ \mathbf{of}\ \mathit{Cases}$		Case
	|	$\lambda p.t$		Function
	|	$\lambda p.t$		Function with graded annotation on its binder
	|	$[t]$		Promote
	|	$\langle t \rangle$		Pure
	|	x		Variable
	|	$C\ t_0 \ldots t_n$		Constructor
	|	C		
	|	n		Integer constructors
	|	$\mathbf{let}\ [p] = t_1\ \mathbf{in}\ t_2$	S	Modal let-binding
	|	$\mathbf{inl}\ t$		Inl
	|	$\mathbf{inr}\ t$		Inr
	|	$\mathbf{let}\ (x_1, x_2) = t_1\ \mathbf{in}\ t_2$	S	Pair let-binding
	|	(t_1, t_2)		A pair of terms
	|	$-$		Hole
	|	$\mathbf{let}\ () = t_1\ \mathbf{in}\ t_2$		UnitElim
	|	$()$		Unit
	|	$[\![A]\!]^{\Gamma}_{\mathsf{pull}}\ t$		Pull
	|	$[\![A]\!]^{\Gamma}_{\mathsf{push}}\ t$		Push
	|	$[\![A]\!]^{\Gamma}_{\mathsf{pull}}$		PullPartial
	|	$[\![A]\!]^{\Gamma}_{\mathsf{push}}$		PushPartial
	|	$[\![A]\!]^{\Gamma}_{\mathsf{fmap}}\ t$		Fmap
	|	$[\![A]\!]^{\Gamma}_{\mathsf{fmap}}$		FmapPartial
	|			Nothing
	|	$\mathbf{letrec}\ t_1\ =\ t_2\ \mathbf{in}\ t_3$		LetRec
	|	$[\![A]\!]^{\Gamma}_{\mathsf{copyShape}}\ t$		CopyShape
	|	$[\![A]\!]^{\Gamma}_{\mathsf{drop}}\ t$		Drop
C	::=			Constructors
	|	$(,)$		Pair constructor
	|	$\mathbf{inl}$		Left injection
	|	$\mathbf{inr}$		Right injection
	|	unit		Unit
	|	tt		
	|	ff		
	|	Just		
	|	$\mathsf{Nothing}$		
Cases	::=			Value-level cases
	|	$p \rightarrow t; \mathit{Cases}$		Case cons
	|	$p \rightarrow t$		One case
	|	$\overline{p \mapsto t}$		One case overline
	|	$p \mapsto t; \ldots; p' \mapsto t'$	S	Many cases (syntactic sugar)

p	$::=$			Patterns
	$\mid$	x		Variable
	$\mid$	$\_$		Wildcard
	$\mid$	$[p]$		Unbox
	$\mid$	$[[p]]$		Double unboxing
	$\mid$	$C\, p_1 \,...\, p_n$		Constructor
	$\mid$	$C\ \ p_1{}^{Ix_3}_{Ix_1} ... p_2{}^{Ix_3}_{Ix_2}$		ConstructorIndexed
	$\mid$	C		Nullary Constructor
	$\mid$	n		Int constructor
	$\mid$	(p)		
	$\mid$	y^i_j		Hack
	$\mid$	(p_1, p_2)		Pair
	$\mid$	p^{Ix}	S	Pattern at index n+m
Ix	$::=$			More complex index expressions
	$\mid$	0		
	$\mid$	1		
	$\mid$	2		
	$\mid$	$Ix_1 + Ix_2$		
	$\mid$	m		
	$\mid$	1		
	$\mid$	2		
	$\mid$	3		
	$\mid$	4		
	$\mid$	i		
	$\mid$	j		
	$\mid$	n		
	$\mid$	m		
Eqn	$::=$			Equations
	$\mid$	$x\, p_1 \,..\, p_n = t$		Eq
Def	$::=$			Definitions
	$\mid$	$x : C; Eqn_1 \,..\, Eqn_n$		Multi-eq def
$A,\ B,\ C,\ E,\ W,\ C$	$::=$			Types
	$\mid$	$\cdot$		Empty
	$\mid$	$A \rightarrow B$		Function
	$\mid$	A_{DEC}		Dec
	$\mid$	$A^c \rightarrow B$		Graded Function
	$\mid$	$A^c \multimap B$		Graded Linear Function
	$\mid$	$A \multimap B$	S	Linear Function
	$\mid$	K		Constructor
	$\mid$	$K\, A \ldots B$		Constructor
	$\mid$	α		Variable
	$\mid$	$A\, B$		Application
	$\mid$	$A^{Ix_1}_{Ix_2}$		Var2IndexTy
	$\mid$	$\Box A$		BlankBox
	$\mid$	$\Box_c A$		Box
	$\mid$	$\Box_{c:B} A$		Box with coeffect type

	$\vert$	Int		Integers
	$\vert$	Char		Characters
	$\vert$	$\mathsf{1}$		unit
	$\vert$	$\otimes$		Products
	$\vert$	$\mathbb{B}$		Bool
	$\vert$	IO		IO
	$\vert$	R		Coeffect types
	$\vert$	n		Type-level integers
	$\vert$	$A\ \mathsf{op}\ B$		InfixOp
	$\vert$	$A \otimes B$		Tuple
	$\vert$	$A \oplus B$		Sum
	$\vert$	$\{A_1, ..., A_n\}$		
	$\vert$	$\downarrow\kappa$		
	$\vert$	$\mathsf{Set}\ A$		
	$\vert$	${B_1}^1 \to ... \to {B_n}^1 \to A$	S	n-Ary Function
	$\vert$	${B_1}^{q_1} \to ... \to {B_n}^{q_n} \to A$	S	n-Ary Function w grades
	$\vert$	$A \Uparrow$		AsyncTy
	$\vert$	$A \Downarrow$		SyncTy
	$\vert$	X		Recursion Variables
	$\vert$	$\mu X.A$		Recursive Type
op	$::=$			Type operators
	$\vert$	$+$		
	$\vert$	$*$		
	$\vert$	$-$		
	$\vert$	$\leq$		
	$\vert$	$<$		
	$\vert$	$>$		
	$\vert$	$\geq$		
	$\vert$	$=$		
	$\vert$	$\neq$		
	$\vert$	$\sqcup$		
	$\vert$	$\sqcap$		
$R,\ S$	$::=$			Coeffect types
	$\vert$	Nat		Nat
	$\vert$	Level		Level
	$\vert$	Ext		Extending
	$\vert$	$\mathsf{Interval}$		Interval
	$\vert$	$A \times B$		Products
	$\vert$	$R\ S$		Application
	$\vert$	α		Variable
	$\vert$	β		VariableB
Cons	$::=$			Constraints/Predicates
	$\vert$	A, Cons		
	$\vert$	A		
	$\vert$	$A_1, .., A_n$		
	$\vert$	$\overrightarrow{A}$		
	$\vert$	(Cons)		

$c,\ r,\ s,\ q$	::=		
	|	$c_{Ix_2}^{Ix_1}$	Var2Index
	|	c_{Ix_1}	Var1Index
	|	$c_1 + c_2$	Addition
	|	$c_1 \cdot c_2$	Multiplication
	|	0	Additive Unit
	|	1	Multiplicative Unit
	|	$c_1 \sqcup c_2$	Join
	|	$c_1 \sqcap c_2$	Meet
	|	$c_1 \sqcap ... \sqcap c_2$	MultiMeet
	|	$c_1 \sqcup ... \sqcup c_2$	MultiJoin
	|	$c_1 = c_2$	CoeffEq
	|	$\bigsqcup_1^n c$	BigJoin
	|	$\mathsf{flatten}(c_1, A, c_2, B)$	Flatten
	|	Hi	
	|	Lo	
	|	$c_1..c_2$	
	|	∞	
	|	(c_1, c_2)	
	|	$\theta\, c$	
	|	2 S	
	|	3 S	
	|	4 S	
	|	5 S	
	|	6 S	
	|	10 S	
	|	15 S	
	|	20 S	
	|	c_{i-1}	
	|	Unused	
	|	$[r...s]$	
Rel	::=		Relations on grades
	|	$c_1 \sqsubseteq c_2$	
	|	$c_1 \sqsubseteq c_2 \sqsubseteq c_3$	
	|	$c_1 \sqsupseteq c_2$	
	|	$c_1 \sqsupseteq c_2 \sqsupseteq c_3$	
	|	$Rel_1 \wedge Rel_2$	
κ	::=		
	|	Type	Type
	|	$\uparrow A$	Promote a type to a kind
	|	Effect	Effect grades
	|	$\mathsf{Coeffect}$	Coeffect grades
	|	Eff	
	|	Coeff	
	|	$\mathsf{(Co)eff}$	
	|	$\mathsf{Predicate}$	Predicates
	|	$\kappa_1 \to \kappa_2$	Kind function
	|	$\kappa_1 \cup \kappa_2$	

	$\mid$	$\theta\kappa$	Substitutions
	$\mid$	(κ)	
D	$::=$		
	$\mid$	$\emptyset$	Empty
	$\mid$	D_1, D_2	
	$\mid$	(D)	
As	$::=$		
	$\mid$	$x : C$	Singleton context
	$\mid$	$x :_r C$	Singleton context w/ graded assumption
	$\mid$	$x^{Ix_1}_{Ix_2} :_c C$	Indexed Variable
	$\mid$	$x^{Ix_1} :_c C$	Indexed Variable 1
$\Gamma,\ \Delta,\ \Omega$	$::=$		
	$\mid$	$\emptyset$	Empty
	$\mid$	As	Single assumption
$r :?R$	$::=$		
	$\mid$	c	
	$\mid$	$-$	
	$\mid$	$(r :?R)$	
	$\mid$	$\theta r :?R$	
P	$::=$		
	$\mid$	$P_1 \wedge P_2$	
	$\mid$	$P_1 \wedge ... \wedge P_n$	
	$\mid$	$P_1 \vee P_2$	
	$\mid$	$P_1 \rightarrow P_2$	
	$\mid$	$\forall \alpha . P$	
	$\mid$	$\neg P$	
	$\mid$	$\exists \alpha . P$	
	$\mid$	$\mathbf{t}_1 \equiv \mathbf{t}_2$	
	$\mid$	$\mathbf{t}_1 \sqsubseteq \mathbf{t}_2$	
	$\mid$	$\top$	
	$\mid$	(P)	
	$\mid$	$\llbracket \theta \rrbracket$	
	$\mid$	$\llbracket Cons \rrbracket$	
$\mathbf{t}$	$::=$		
	$\mid$	$\llbracket c \rrbracket$	
	$\mid$	$\llbracket A \rrbracket$	
$\theta,\ \theta_\kappa$	$::=$		
	$\mid$	$\emptyset$	Empty
	$\mid$	$\theta_1 \uplus \theta_2$	Union
	$\mid$	$x \mapsto B$	SingletonTy
	$\mid$	$x \mapsto \kappa$	SingletonKind
	$\mid$	$x \mapsto c$	Singleton Coeffect

$\mid$	$\theta\theta'$	Substitution over a substitution
$\mid$	$\theta_1 \uplus \ldots \uplus \theta_2$	
$\mid$	θ, θ'	Disjoint cat
$\mid$	$\theta \setminus x$	Remove a substition for a variable

$\mathcal{C}$	$::=$	
	$\mid$	$x \mapsto c$
	$\mid$	$\mathcal{C} + \mathcal{C}'$
	$\mid$	$\mathcal{C}, \mathcal{C}'$
	$\mid$	$(\mathcal{C})$
	$\mid$	$\mathcal{C}$
	$\mid$	$\emptyset$
	$\mid$	$c \cdot \mathcal{C}$

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

1 Typing

$$\frac{}{0 \cdot \Gamma, x :_1 A \vdash x : A} \textsc{TyVar}$$

$$\frac{\Gamma, x :_r A \vdash t : B}{\Gamma \vdash \lambda x.t : A^r \to B} \textsc{TyAbs}$$

$$\frac{\Gamma_1 \vdash t_1 : A^r \to B \qquad \Gamma_2 \vdash t_2 : A}{\Gamma_1 + r \cdot \Gamma_2 \vdash t_1\, t_2 : B} \textsc{TyApp}$$

$$\frac{(C : {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\, \vec{A}) \in D}{0 \cdot \Gamma \vdash C : {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\, \vec{A}} \textsc{TyCon}$$

$$\frac{\Gamma \vdash t : A}{r \cdot \Gamma \vdash [t] : \Box_r A} \textsc{TyPr}$$

$$\frac{\Gamma, x :_r A, \Gamma' \vdash t : B \qquad r \sqsubseteq s}{\Gamma, x :_s A, \Gamma' \vdash t : B} \textsc{TyApprox}$$

$$\frac{\Gamma \vdash t : A \qquad r \vdash p_i : A \rhd \Delta_i \qquad \Gamma', \Delta_i \vdash t_i : B}{r \cdot \Gamma + \Gamma' \vdash \textbf{case}\ t\ \textbf{of}\ p_1 \mapsto t_1; \ldots; p_n \mapsto t_n : B} \textsc{TyCase}$$

$\boxed{c \vdash p : A \rhd \Gamma}$ Declarative pattern checking for Granule Mini (monomorphic)

$$\frac{0 \sqsubseteq r}{r \vdash \_ : A \rhd \emptyset} \textsc{PatWild}$$

$$\frac{}{r \vdash p : A \rhd x :_r A} \textsc{PatVar}$$

$$\frac{r \cdot s \vdash p : A \rhd \Gamma}{r \vdash [p] : \Box_s A \rhd \Gamma} \textsc{PatBox}$$

$$\frac{\begin{array}{l}(C : {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\, \vec{A}) \in D \\ q_i \cdot r \vdash p_i : B_i \rhd \Gamma_i \qquad |K\, \vec{A}| > 1 \Rightarrow 1 \sqsubseteq r\end{array}}{r \vdash C\, p_1 \ldots p_n : K\, \vec{A} \rhd \overrightarrow{\Gamma_i}} \textsc{PatCon}$$

$\boxed{\Gamma_1 \vdash A \Rightarrow^- t \mid \Gamma_2}$

$\boxed{\Gamma \vdash A \Rightarrow t \mid \Delta}$

$$\frac{}{\Gamma, x :_r A \vdash A \Rightarrow x \mid 0 \cdot \Gamma, x :_1 A} \textsc{Var}$$

$$\frac{\Gamma, x :_q A \vdash B \Rightarrow t \mid \Delta, x :_r A \qquad r \sqsubseteq q}{\Gamma \vdash A^q \to B \Rightarrow \lambda x.t \mid \Delta}\ \textsc{Abs}$$

$$\frac{\begin{array}{l}\Gamma, x_1 :_{r_1} A^q \to B, x_2 :_{r_1} B \vdash C \Rightarrow t_1 \mid \Delta_1, x_1 :_{s_1} A^q \to B, x_2 :_{s_2} B \\ \Gamma, x_1 :_{r_1} A^q \to B \vdash A \Rightarrow t_2 \mid \Delta_2, x_1 :_{s_3} A^q \to B\end{array}}{\Gamma, x_1 :_{r_1} A^q \to B \vdash C \Rightarrow [(x_1\ t_2)/x_2]t_1 \mid (\Delta_1 + s_2 \cdot q \cdot \Delta_2), x_1 :_{s_2 + s_1 + (s_2 \cdot q \cdot s_3)} A^q \to B}\ \textsc{App}$$

$$\frac{\Gamma \vdash A \Rightarrow t \mid \Delta}{\Gamma \vdash \Box_r A \Rightarrow [t] \mid r \cdot \Delta}\ \textsc{Box}$$

$$\frac{\begin{array}{l}(C : {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\ \vec{A}) \in D \\ \Gamma \vdash B_i \Rightarrow t_i \mid \Delta_i\end{array}}{\Gamma \vdash K\ \vec{A} \Rightarrow C\ t_1 \ldots t_n \mid 0 \cdot \Gamma + (q_1 \cdot \Delta_1) + \ \ldots\ + (q_n \cdot \Delta_n)}\ \textsc{Con}$$

$$\frac{\begin{array}{l}(C : {B_1}^{r_1} \to \ldots \to {B_n}^{r_n} \to K\ A) \in D \\ \Gamma, x :_1 {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\ A \vdash A_1 \Rightarrow t \mid \Delta, x :_1 {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\ A\end{array}}{\Gamma \vdash A_1 \Rightarrow t \mid \Delta}\ \textsc{ConAlt}$$

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1^i} \to \ldots \to {B_n}^{q_n^i} \to K\ \vec{A}) \in D \\ \Gamma, x :_r K\ \vec{A}, y_1^i :_{r \cdot q_1^i} B_1, \ldots, y_n^i :_{r \cdot q_1^i} B_n \vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_i} K\ \vec{A}, y_1^i :_{s_1^i} B_1, \ldots, y_n^i :_{s_n^i} B_n \\ \exists {s'}_j^i .\ s_j^i \sqsubseteq {s'}_j^i \cdot q_j^i \sqsubseteq r \cdot q_j^i \\ s_i = {s'}_1^i \sqcup \ldots \sqcup {s'}_n^i \\ |K\ \vec{A}| > 1 \Rightarrow 1 \sqsubseteq s_1 \sqcup \ldots \sqcup s_m\end{array}}{\Gamma, x :_r K\ \vec{A} \vdash B \Rightarrow \textbf{case}\ x\ \textbf{of}\ \overline{C_i\ y_1^i \ldots y_n^i \mapsto t_i} \mid (\Delta_1 \sqcup \ldots \sqcup \Delta_m), x :_{(r_1 \sqcup \ldots \sqcup r_m) + (s_1 \sqcup \ldots \sqcup s_m)} K\ \vec{A}}\ \textsc{Case}$$

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1^i} \to \ldots \to {B_n}^{q_n^i} \to K\ A) \in D \\ \Gamma, x :_r K\ A, y_1^i :_{r \cdot q_1^i} B_1, \ldots, y_n^i :_{r \cdot q_1^i} B_n \vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_i} K\ A, y_1^i :_{s_1^i} B_1, \ldots, y_n^i :_{s_n^i} B_n \\ s_i = s_1^i \sqcup \ldots \sqcup s_n^i \\ q_i = q_1^i \sqcup \ldots \sqcup q_n^i \\ \exists {s'}_i .\ s_i \sqsubseteq {s'}_i \cdot q_i \sqsubseteq r \cdot q_i\end{array}}{\Gamma, x :_r K\ A \vdash B \Rightarrow \textbf{case}\ x\ \textbf{of}\ \overline{C_i\ y_1^i \ldots y_n^i \mapsto t_i} \mid (\Delta_1 \sqcup \ldots \sqcup \Delta_n), x :_{(r_1 \sqcup \ldots \sqcup r_n) + ({s'}_1 \sqcup \ldots \sqcup {s'}_n)} K\ A}\ \textsc{CaseAltAlt}$$

$$\frac{\begin{array}{l}\Gamma, y :_{r \cdot q} A, x :_r \Box_q A \vdash B \Rightarrow t \mid \Delta, y :_{s_1} A, x :_{s_2} \Box_q A \\ \exists s_3 .\ s_1 \sqsubseteq s_3 \cdot q \sqsubseteq r \cdot q\end{array}}{\Gamma, x :_r \Box_q A \vdash B \Rightarrow \textbf{case}\ x\ \textbf{of}\ [y] \to t \mid \Delta, x :_{s_3 + s_2} \Box_q A}\ \textsc{Unbox}$$

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1} \to \ldots \to {B_n}^{q_n} \to K\ A) \in D \\ \Gamma, x :_r K\ A, y_1^i :_{r \cdot q_1} B_1, \ldots, y_n^i :_{r \cdot q_n} B_n \vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_1^i} K\ A, y_1^i :_{s_1^i} B_1, \ldots, y_n^i :_{s_n^i} B_n \\ \exists r_2^i .\ r \sqsupseteq r_2^i + r_1^i \cdot (s_1^i \sqcap \ldots \sqcap s_1^n)\end{array}}{\Gamma, x :_{r_1} K\ A \vdash B \Rightarrow \textbf{case}\ x\ \textbf{of}\ \overline{C_i\ y_1^i \ldots y_n^i \mapsto t_i} \mid (\Delta_1 \sqcap \ldots \sqcap \Delta_n), x :_{r_2^1 \sqcap \ldots \sqcap r_2^n} K\ A}\ \textsc{CaseSub}$$

$$\boxed{\Gamma; \Omega \vdash A \Uparrow\!\Rightarrow t \mid \Delta}$$

$$\frac{\Gamma; \Omega, x :_q A \vdash B \Uparrow\!\Rightarrow t \mid \Delta, x :_r A \qquad r \sqsubseteq q}{\Gamma; \Omega \vdash A^q \to B \Uparrow\!\Rightarrow \lambda x.t \mid \Delta}\ \textsc{AbsF}$$

$$\boxed{\Gamma; \Omega \Uparrow\vdash A \Rightarrow t \mid \Delta}$$

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1^i} \to \ldots \to {B_n}^{q_n^i} \to K\ \vec{A}) \in D \\ \Gamma; \Omega, x :_r K\ \vec{A}, y_1^i :_{r \cdot q_1^i} B_1, \ldots, y_n^i :_{r \cdot q_1^i} B_n \Uparrow\vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_i} K\ \vec{A}, y_1^i :_{s_1^i} B_1, \ldots, y_n^i :_{s_n^i} B_n \\ \exists {s'}_j^i .\ s_j^i \sqsubseteq {s'}_j^i \cdot q_j^i \sqsubseteq r \cdot q_j^i \\ s_i = {s'}_1^i \sqcup \ldots \sqcup {s'}_n^i \\ |K\ \vec{A}| > 1 \Rightarrow 1 \sqsubseteq s_1 \sqcup \ldots \sqcup s_m\end{array}}{\Gamma; \Omega, x :_r K\ \vec{A} \Uparrow\vdash B \Rightarrow \textbf{case}\ x\ \textbf{of}\ \overline{C_i\ y_1^i \ldots y_n^i \mapsto t_i} \mid (\Delta_1 \sqcup \ldots \sqcup \Delta_m), x :_{(r_1 \sqcup \ldots \sqcup r_m) + (s_1 \sqcup \ldots \sqcup s_m)} K\ \vec{A}}\ \textsc{CaseF}$$

$$\frac{\begin{array}{l}\Gamma ; \Omega, y :_{r \cdot q} A, x :_r \Box_q A \Uparrow\vdash B \Rightarrow t \mid \Delta, y :_{s_1} A, x :_{s_2} \Box_q A \\ \exists s_3 .\ s_3 \cdot q \sqsubseteq s_1\end{array}}{\Gamma ; \Omega, x :_r \Box_q A \Uparrow\vdash B \Rightarrow \textbf{case } x \textbf{ of } [y] \rightarrow t \mid \Delta, x :_{s_3 + s_2} \Box_q A} \quad \textsc{UnboxF}$$

$\boxed{\Gamma \vdash A \Downarrow t \mid \Delta}$

$$\frac{\begin{array}{l}(C : {B_1}^1 \rightarrow \ldots \rightarrow {B_n}^1 \rightarrow K\ \vec{A}) \in D \\ \Gamma \vdash B_i \Downarrow \Rightarrow t_i \mid \Delta_i\end{array}}{\Gamma \vdash K\ A \Downarrow C\ t_1 \ldots t_n \mid \Delta_1 + \ldots + \Delta_n} \quad \textsc{ConF}$$

$\boxed{\Gamma ; \Omega \Downarrow\vdash A \Rightarrow t \mid \Delta}$

$$\frac{}{\Gamma ; x :_r A \Downarrow\vdash A \Rightarrow x \mid 0 \cdot \Gamma, x :_1 A} \quad \textsc{VarF}$$

$$\frac{\begin{array}{l}\Gamma ; x_1 :_{r_1} A^q \rightarrow B, x_2 :_{r_1} B \Downarrow\vdash C \Rightarrow t_1 \mid \Delta_1, x_1 :_{s_1} A^q \rightarrow B, x_2 :_{s_2} B \\ \Gamma ; x_1 :_{r_1} A^q \rightarrow B \Downarrow\vdash A \Rightarrow t_2 \mid \Delta_2, x_1 :_{s_3} A^q \rightarrow B\end{array}}{\Gamma ; x_1 :_{r_1} A^q \rightarrow B \Downarrow\vdash C \Rightarrow [(x_1\ t_2)/x_2]t_1 \mid (\Delta_1 + s_2 \cdot q \cdot \Delta_2), x_1 :_{s_2 + s_1 + (s_2 \cdot q \cdot s_3)} A^q \multimap B} \quad \textsc{AppF}$$

$\boxed{\Gamma \vdash A \Rightarrow^- t \mid \Delta}$

$$\frac{}{\Gamma, x : A \vdash A \Rightarrow^- x \mid \Gamma} \quad \textsc{Syn\_sub\_lin\_var}$$

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Definition rules:        28 good    0 bad
Definition rule clauses: 73 good    0 bad
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