$termvar$, α, β, γ, $\mathcal{L}$, x, y, z, f, g, h, adv
$index$, i, j, n, m

Foc	$::=$			Focusing phase
	$\vert$	A		Async
	$\vert$	S		Sync
$t,\ v$	$::=$			Terms
	$\vert$	$t_1\ t_2$		Application
	$\vert$	$\mathbf{let}\ \langle p \rangle \leftarrow t_1\ \mathbf{in}\ t_2$		Effectful Let Binding
	$\vert$	$\mathbf{case}\ t\ \mathbf{of}\ \mathit{Cases}$		Case
	$\vert$	$\lambda p.t$		Function
	$\vert$	$\lambda p.t$		Function with graded annotation on its binder
	$\vert$	$[t]$		Promote
	$\vert$	$\langle t \rangle$		Pure
	$\vert$	x		Variable
	$\vert$	$C\ t_0 \ldots t_n$		Constructor
	$\vert$	C		
	$\vert$	n		Integer constructors
	$\vert$	$\mathbf{let}\ [p] = t_1\ \mathbf{in}\ t_2$	S	Modal let-binding
	$\vert$	(t_1, t_2)		A pair of terms
	$\vert$	$-$		Hole
C	$::=$			Constructors
	$\vert$	$(,)$		Pair constructor
	$\vert$	$\mathbf{inl}$		Left injection
	$\vert$	$\mathbf{inr}$		Right injection
	$\vert$	unit		Unit
	$\vert$	tt		
	$\vert$	ff		
	$\vert$	Just		
	$\vert$	Nothing		
Cases	$::=$			Value-level cases
	$\vert$	$p \rightarrow t; \mathit{Cases}$		Case cons
	$\vert$	$p \rightarrow t$		One case
	$\vert$	$\overline{p \mapsto t}$		One case overline
	$\vert$	$p \mapsto t; \ldots; p' \mapsto t'$	S	Many cases (syntactic sugar)
p	$::=$			Patterns
	$\vert$	x		Variable
	$\vert$	$\_$		Wildcard
	$\vert$	$[p]$		Unbox
	$\vert$	$[[p]]$		Double unboxing
	$\vert$	$C\ p_1 \ldots p_n$		Constructor
	$\vert$	$C\ \ {p_1}^{Ix_3}_{Ix_1} \ldots {p_2}^{Ix_3}_{Ix_2}$		ConstructorIndexed
	$\vert$	C		Nullary Constructor
	$\vert$	n		Int constructor
	$\vert$	(p)		
	$\vert$	y^i_j		Hack
	$\vert$	(p_1, p_2)		Pair
	$\vert$	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
	$\mid$	Int		Integers
	$\mid$	Char		Characters
	$\mid$	Unit		unit
	$\mid$	$\otimes$		Products
	$\mid$	$\mathbb{B}$		Bool
	$\mid$	IO		IO
	$\mid$	R		Coeffect types
	$\mid$	n		Type-level integers
	$\mid$	$A\, \mathsf{op}\, B$		InfixOp
	$\mid$	$(A\ \times\ B)$		Tuple
	$\mid$	$(A\ +\ B)$		Sum
	$\mid$	$\{A_1, ..., A_n\}$		
	$\mid$	$\downarrow \kappa$		
	$\mid$	$\mathsf{Set}\ A$		

	$\vert$	${B_1}^1 \rightarrow ... \rightarrow {B_n}^1 \rightarrow A$	S	n-Ary Function
	$\vert$	${B_1}^{q_1} \rightarrow ... \rightarrow {B_n}^{q_n} \rightarrow A$	S	n-Ary Function w grades
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		
	$\vert$	$A_1, .., A_n$		
	$\vert$	$\overrightarrow{A}$		
	$\vert$	$(Cons)$		
$c,\ r,\ s,\ q$	$::=$			
	$\vert$	$c^{Ix_1}_{Ix_2}$		Var2Index
	$\vert$	c_{Ix_1}		Var1Index
	$\vert$	$c_1 + c_2$		Addition
	$\vert$	$c_1 \cdot c_2$		Multiplication
	$\vert$	0		Additive Unit
	$\vert$	1		Multiplicative Unit
	$\vert$	$c_1 \sqcup c_2$		Join
	$\vert$	$c_1 \sqcap c_2$		Meet
	$\vert$	$c_1 \sqcap ... \sqcap c_2$		MultiMeet
	$\vert$	$c_1 \sqcup ... \sqcup c_2$		MultiJoin
	$\vert$	$c_1 = c_2$		CoeffEq
	$\vert$	$\bigsqcup_1^n c$		BigJoin
	$\vert$	$\mathsf{flatten}(c_1, A, c_2, B)$		Flatten
	$\vert$	$c_1 .. c_2$		
	$\vert$	∞		
	$\vert$	(c_1, c_2)		

	$\mid$	θc	
	$\mid$	2	S
	$\mid$	3	S
	$\mid$	4	S
	$\mid$	c_{i-1}	
Rel	$::=$		Relations on grades
	$\mid$	$c_1 \sqsubseteq c_2$	
	$\mid$	$c_1 \sqsubseteq c_2 \sqsubseteq c_3$	
	$\mid$	$c_1 \sqsupseteq c_2$	
	$\mid$	$c_1 \sqsupseteq c_2 \sqsupseteq c_3$	
	$\mid$	$Rel_1 \wedge Rel_2$	
κ	$::=$		
	$\mid$	Type	Type
	$\mid$	$\uparrow A$	Promote a type to a kind
	$\mid$	Effect	Effect grades
	$\mid$	$\mathsf{Coeffect}$	Coeffect grades
	$\mid$	Eff	
	$\mid$	Coeff	
	$\mid$	$\mathsf{(Co)eff}$	
	$\mid$	$\mathsf{Predicate}$	Predicates
	$\mid$	$\kappa_1 \rightarrow \kappa_2$	Kind function
	$\mid$	$\kappa_1 \cup \kappa_2$	
	$\mid$	$\theta\kappa$	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)	
	$\mid$	$[\![\theta]\!]$	
	$\mid$	$[\![Cons]\!]$	
$\mathbf{t}$	$::=$		
	$\mid$	$[\![c]\!]$	
	$\mid$	$[\![A]\!]$	
$\theta,\ \theta_\kappa$	$::=$		
	$\mid$	$\emptyset$	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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1^i} \rightarrow ... \rightarrow {B_n}^{q_n^i} \rightarrow K\ \vec{A}) \in D \\ \Gamma, x :_r K\ A, y_1^i :_{q_1^i} B_1, ..., y_n^i :_{q_n^i} B_n \vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_i} K\ A, y_1^i :_{s_1^i} B_1, ..., y_n^i :_{s_n^i} B_n \\ s_j^i \sqsubseteq q_j^i \\ s_i = s_1^i \sqcup ... \sqcup s_n^i\end{array}}{\Gamma, x :_r K\ A \vdash B \Rightarrow \textbf{case}\ x\ \textbf{of}\ \overline{C_i\ \ y_1^i ... y_n^i \mapsto t_i} \mid (\Delta_1 \sqcup ... \sqcup \Delta_n), x :_{(r_1 \sqcup ... \sqcup r_n) + (s_1 \sqcup ... \sqcup s_n)} K\ A}\ \textsc{Case}$$

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1^i} \to ... \to {B_n}^{q_n^i} \to K\,\vec{A}) \in D \\ \Gamma, x :_r K\,\vec{A}, y_1^i :_{r \cdot q_1^i} B_1, ..., y_n^i :_{r \cdot q_1^i} B_n \vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_i} K\,\vec{A}, y_1^i :_{s_1^i} B_1, ..., y_n^i :_{s_n^i} B_n \\ \exists {s'}^i_j .\ s^i_j \sqsubseteq {s'}^i_j \cdot q^i_j \sqsubseteq r \cdot q^i_j \\ s_i = {s'}^i_1 \sqcup ... \sqcup {s'}^i_n \\ |K\,\vec{A}| > 1 \Rightarrow 1 \sqsubseteq s_1 \sqcup ... \sqcup s_m \end{array}}{\Gamma, x :_r K\,\vec{A} \vdash B \Rightarrow \mathbf{case}\ x\ \mathbf{of}\ \overline{C_i\ y_1^i ... y_n^i \mapsto t_i} \mid (\Delta_1 \sqcup ... \sqcup \Delta_m), x :_{(r_1 \sqcup ... \sqcup r_m) + (s_1 \sqcup ... \sqcup s_m)} K\,\vec{A}}\ \textsc{CaseAlt}$$

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

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

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

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

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

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

$$\frac{\begin{array}{l}(C_i : {B_1}^{q_1} \to ... \to {B_n}^{q_n} \to K\,A) \in D \\ \Gamma; \Omega, x :_r K\,A_1, y_1^i :_{q_1} B_1, ..., y_n^i :_{q_n} B_n \Uparrow\vdash B \Rightarrow t_i \mid \Delta_i, x :_{r_i} K\,A, y_1^i :_{s_1^i} B_1, ..., y_n^i :_{s_n^i} B_n \\ s_j^i \sqsubseteq q_j \\ s_i = s_1^i \sqcup ... \sqcup s_n^i \end{array}}{\Gamma; \Omega, x :_r K\,A \Uparrow\vdash B \Rightarrow \mathbf{case}\ x\ \mathbf{of}\ \overline{C_i\ y_1^i ... y_n^i \mapsto t_i} \mid (\Delta_1 \sqcup ... \sqcup \Delta_n), x :_{(r_1 \sqcup ... \sqcup r_n) + (s_1 \sqcup ... \sqcup s_n)} K\,A}\ \textsc{CaseF}$$

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

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

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

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

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

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

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

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Definition rules:        29 good    0 bad
Definition rule clauses: 78 good    0 bad
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