termvar, x, y, z, f

semiringEl, r, s

type, T, S

mathcals, $\mathcal{C}$, $\mathcal{M}$, $\mathcal{G}$

mathsft, F, G

o, i, j, k, l

mode, m

$\mathcal{R}$	::=		Semiring
	|	r	Element
	|	a	Additive Unit
	|	m	Multiplimathcalive Unit
	|	$\mathcal{R}_1 \circledast \mathcal{R}_2$	Multiplimathcalion
	|	$\mathcal{R}_1 \oplus \mathcal{R}_2$	Addition

$A,\ B,\ C,\ D$	::=			Linear Formulas
	|	I		Unit
	|	$A \boxtimes B$		Tensor Product
	|	$(A \odot \mathcal{R}) \to B$		Implication
	|	$\square_{\mathcal{R}} A$		Graded Necessity Modality
	|	(A)	S	Parentheses

$\Gamma,\ \Delta$	::=			Context
	|	$\emptyset$		Empty Context
	|	$x : A$		
	|	Γ_1, Γ_2		Context Extension
	|	(Γ)	S	

p	::=	
	|	x
	|	(p_1, p_2)
	|	$\square\, p$

t	::=		Terms
	|	x	
	|	i	
	|	(t_1, t_2)	
	|	let $p = t_3$ in t_4	
	|	$\lambda x.t$	
	|	$t_1\, t_2$	
	|	$\square\, t$	

γ	::=		Vectors
	|	$\emptyset$	
	|	$\mathcal{R}$	

$$\begin{array}{ll} | & \gamma_1, ..., \gamma_i \\ | & (\gamma) \end{array} \qquad \mathsf{S}$$

$\boxed{\gamma_1 \leq \gamma_2}$ Context Order

$$\frac{}{\emptyset \leq \emptyset} \text{ SC\textsc{tx}\_E\textsc{mpty}}$$

$$\frac{\gamma_1 \leq \gamma_2 \quad r_1 \leq r_2}{(\gamma_1, r_1) \leq (\gamma_2, r_2)} \text{ SC\textsc{tx}\_E\textsc{xt}}$$

$\boxed{\gamma \odot \Gamma \vdash t : A}$ Graded Term Assignment

$$\frac{}{\mathsf{m} \odot x : A \vdash x : A} \text{ T\_I\textsc{d}}$$

$$\frac{}{\emptyset \odot \emptyset \vdash \mathsf{i} : \mathsf{I}} \text{ T\_U\textsc{nit}I}$$

$$\frac{\begin{array}{c} \gamma_1 \odot \Gamma_1 \vdash t_1 : A \\ \gamma_2 \odot \Gamma_2 \vdash t_2 : B \end{array}}{(\gamma_1, \gamma_2) \odot (\Gamma_1, \Gamma_2) \vdash (t_1, t_2) : A \boxtimes B} \text{ T\_T\textsc{en}I}$$

$$\frac{\begin{array}{c} \gamma_2 \odot \Gamma_2 \vdash t_1 : A \boxtimes B \\ (\gamma_1, r_1, r_1, \gamma_3) \odot (\Gamma_1, x : A, y : B, \Gamma_3) \vdash t_2 : C \end{array}}{(\gamma_1, r_2 \circledast \gamma_2, \gamma_3) \odot (\Gamma_1, \Gamma_2, \Gamma_3) \vdash \mathsf{let}\,(x, y) = t_1 \,\mathsf{in}\, t_2 : C} \text{ T\_T\textsc{en}E}$$

$$\frac{(\gamma, r_1) \odot (\Gamma, x : A) \vdash t : B}{\gamma \odot \Gamma \vdash \lambda x.t : (A \odot r_1) \to B} \text{ T\_F\textsc{un}I}$$

$$\frac{\begin{array}{c} \gamma_2 \odot \Gamma_2 \vdash t_2 : A \\ \gamma_1 \odot \Gamma_1 \vdash t_1 : (A \odot r_1) \to B \end{array}}{(\gamma_1, r_2 \circledast \gamma_2) \odot (\Gamma_1, \Gamma_2) \vdash t_1\, t_2 : B} \text{ T\_F\textsc{un}E}$$

$$\frac{\gamma \odot \Gamma \vdash t : A}{(r \circledast \gamma) \odot \Gamma \vdash \square\, t : \square_r A} \text{ T\_B\textsc{ox}I}$$

$$\frac{\gamma_2 \odot \Gamma_2 \vdash t_1 : \square_r A \quad (\gamma_1, r, \gamma_3) \odot (\Gamma_1, x : A, \Gamma_3) \vdash t_2 : B}{(\gamma_1, \gamma_2, \gamma_3) \odot (\Gamma_1, \Gamma_2, \Gamma_3) \vdash \mathsf{let}\,\square\, x = t_1 \,\mathsf{in}\, t_2 : B} \text{ T\_B\textsc{ox}E}$$

$$\frac{\gamma_1 \odot \Gamma_1 \vdash t : A \quad \gamma_1 \leq \gamma_2}{\gamma_2 \odot \Gamma_2 \vdash t : A} \text{ T\_S\textsc{ub}}$$

$$\frac{(\gamma_1, \gamma_2) \odot (\Gamma_1, \Gamma_2) \vdash t : B}{(\gamma_1, \mathsf{a}, \gamma_2) \odot (\Gamma_1, x : A, \Gamma_2) \vdash t : B} \text{ T\_W\textsc{eak}}$$

$$\frac{(\gamma_1, r_1, r_2, \gamma_2) \odot (\Gamma_1, x : A, y : A, \Gamma_2) \vdash t : B}{(\gamma_1, (r_1 \oplus r_2), \gamma_2) \odot (\Gamma_1, x : A, \Gamma_2) \vdash [x/y]t : B} \text{ T\_C\textsc{ont}}$$

$$\frac{(\gamma_1, r_1, r_2, \gamma_2) \odot (\Gamma_1, x : A, y : B, \Gamma_2) \vdash t : C}{(\gamma_1, r_2, r_1, \gamma_2) \odot (\Gamma_1, y : B, x : A, \Gamma_2) \vdash t : C} \text{ T\_Ex}$$