Data Structure	Size	Type	Storage	Internals	Sparse Zero
Index	1	uint64	Dense	Transparent	No
Scalar	1	int, long, float, …, Index	Dense	Transparent	No
Sparse Zero	1	Scalar	Dense	Transparent	No
Value Zero	1	Scalar	Dense	Transparent	No
Index Array	N	Index	Dense	Transparent	No
Scalar Array	N	Scalar	Dense	Transparent	No
Tuple	2 Index Array, 1 Scalar Array	2 Index, 1 Scalar	Dense	Transparent	No
Matrix	NxM	Scalar	Sparse/Dense?	Opaque	maybe
Vector	N	Scalar	Sparse/Dense?	Opaque	maybe

Old Math Spec Name	New Math Spec Name (interim)	Candidate Root Name (capitilization TBD)	Operation	Outputs -> 1	2	3	4	5	6	Inputs -> 1	2	3	4	5	6	7	8	9	10
SpGEMM (matrix matrix)	MxM	*mxm*	$\mathbf{C} \oplus= \neg\mathbf{A}^{\mathsf{T}} \oplus.\otimes \neg\mathbf{B}^{\mathsf{T}}$	C						⊕=		¬	A	T	⊕	⊗	¬	B	T
	MxV	*mxv*	$\mathbf{c} \oplus= \neg\mathbf{A}^{\mathsf{T}} \oplus.\otimes \neg\mathbf{b}$	c						⊕=		¬	A	T	⊕	⊗	¬	b	
	VxM	*vxm*	$\mathbf{c} \oplus= \neg\mathbf{a} \oplus.\otimes \neg\mathbf{B}^{\mathsf{T}}$	c						⊕=		¬	a		⊕	⊗	¬	B	
SpRef	Extract	*extract*	$\mathbf{C} \oplus= \neg\mathbf{A}^{\mathsf{T}}(\mathbf{i},\mathbf{j})$	C						⊕=		¬	A	T	i	j			
SpAsgn	Assign	*assign*	$\mathbf{C}(\mathbf{i},\mathbf{j}) \oplus= \neg\mathbf{A}^{\mathsf{T}}$	C						⊕=		¬	A	T	i	j			
SpEWiseX (add)	EwiseAdd	*ewiseadd*	$\mathbf{C} \oplus= \neg\mathbf{A}^{\mathsf{T}} \oplus \neg\mathbf{B}^{\mathsf{T}}$	C						⊕=		¬	A	T	⊕		¬	B	T
SpEWiseX (mult)	EwiseMult	*ewisemult*	$\mathbf{C} \oplus= \neg\mathbf{A}^{\mathsf{T}} \otimes \neg\mathbf{B}^{\mathsf{T}}$	C						⊕=		¬	A	T	⊗		¬	B	T
Apply	Apply	*apply*	$\mathbf{C} \oplus= f(\neg\mathbf{A}^{\mathsf{T}})$	C						⊕=	f	¬	A	T					
Reduce	Reduce	*reduce*	$\mathbf{c} \oplus= \oplus_i \mathbf{A}(i,:)$	c						⊕=			A		⊕				
			$\mathbf{c} \oplus= \oplus_j \mathbf{A}(:,j)$	c						⊕=			A		⊕				
Sparse	BuildMatrix	*buildmatrix*	$\mathbf{C} \oplus= \mathbb{S}^{\mathrm{NxM}}(\mathbf{i},\mathbf{j},\mathbf{v},\oplus)$	C						⊕=	𝕊		N	M	i	j	v	⊕	
Find	ExtractTuples	*extracttuples*	$(\mathbf{i},\mathbf{j},\mathbf{v}) = \mathbf{A}$	i	j	v							A						
Transpose	Transpose	*transpose*	$\mathbf{C} \oplus= \neg\mathbf{A}^{\mathsf{T}}$	C						⊕=		¬	A						
Kron (proposal)	Kron (proposal)	*kron*	$\mathbf{C} \oplus= \neg\mathbf{A}^{\mathsf{T}} \otimes \neg\mathbf{B}^{\mathsf{T}}$	C						⊕=		¬	A	T	⊗		¬	B	T

Operation	Notation
namespace	GraphBLAS
prefix	GrB
matrix	bold upper case roman latter
vector	bold lower case roman latter
matrix transpose	superscript T
scalar addition	circle plus
summation	circle plus with subscript
scalar multiplication	circle times
matrix product	circle plus dot circle times
accumulate	circle plus equals
sub-index	parentheses
all rows or columns	colon
optional	blue text
scalar type	outline text
matrix dimension	upper case x upper case
function arguments	parentheses
kronecker product	circle circle times