

Geometric Algebra Palette

▼ Initialize Geometric Algebra

Signature Type (e.g., $e_1^2 = +1$, $e_k^2 = -1$ for $k > 1$)

☒ Mathematicians: - + + +

☐ Physicists: + - - -

of time dimensions: 0 (space), 1 (spacetime)

0

Notebook 'Needs' Statement

Needs[GeomAlg2019Oct`]

▼ Typing Aids: Subscripts & Operators

e_1	e_2	e_3	e_4	e_{\square}	\diamond	\wedge	\cdot	$*$	\neg	\vdash
a_{\square}	b_{\square}	c_{\square}	d_{\square}	r_{\square}	s_{\square}	t_{\square}	x_{\square}	y_{\square}	z_{\square}	\blacksquare_{\square}

▼ Typing Aids: Multivector Generators

AtomG[1,2,4]	$e_1 e_2 e_4$
VectorG[x,3]	$e_1 x_1 + e_2 x_2 + e_3 x_3$
BiVectorG[3]	$(-a_2 b_1 + a_1 b_2) e_1 e_2$ $+ (-a_3 b_1 + a_1 b_3) e_1 e_3$ $+ (-a_3 b_2 + a_2 b_3) e_2 e_3$
BladeG[2,3]	$(-a_2 b_1 + a_1 b_2) e_1 e_2$ $+ (-a_3 b_1 + a_1 b_3) e_1 e_3$ $+ (-a_3 b_2 + a_2 b_3) e_2 e_3$
GradedClifG[a,2,4]	$e_1 e_2 a_{1,2} + e_1 e_3 a_{1,3} + e_1 e_4 a_{1,4}$ $+ e_2 e_3 a_{2,3} + e_2 e_4 a_{2,4} + e_3 e_4 a_{3,4}$
ClifG[b,3]	$b_0 + b_1 e_1 + b_2 e_2 + b_3 e_3$ $+ e_1 e_2 b_{1,2} + e_1 e_3 b_{1,3} + e_2 e_3 b_{2,3}$ $+ e_1 e_2 e_3 b_{1,2,3}$
EvenClifG[c,3]	$c_0 + e_1 e_2 c_{1,2} + e_1 e_3 c_{1,3} + e_2 e_3 c_{2,3}$
PseudoScalarG[5]	$e_1 e_2 e_3 e_4 e_5$
RotorG[2, 4, $\frac{\pi}{2}$]	$\text{Cos}[\frac{\pi}{4}] + \text{Sin}[\frac{\pi}{4}] e_2 e_4$
ComplexG[a,b]	$a + b i$
QuaternionG[a,b,c,d]	$a + b i + c j + d k$

▼ Geometric Algebra Operations

GeomPrdtG[clif1,clif2]	WedgePrdtG[clif1, clif2]
DotPrdtG[clif1, clif2]	ScalarPrdtG[clif1, clif2]
LeftContractionG[clif1, clif2]	RightContractionG[clif1 ,clif2]
HodgeDualG[clif, n]	HodgeDual2G[clif, n]
GormG[clif]	NormG[clif]
ReverseG[clif]	InverseG[clif]

▼ Multivector Support

ExpandG[clif]	CollectG[clif]
ReduceG[clif]	
MaxGradeG[clif]	MaxDimG[clif]
ConstantG[clif]	FreeTermG[clif]
pSliceG[clif, p]	AtomCoefG[clif,atom]

▼ List Operations and Support

ClifToListG[clif]	ListToClifG[clifList]
CoeffListG[clif]	AtomListG[clif]
SubscriptListG[clif]	EijListG[clif]
GradeListG[clif]	SignatureG[list]

100% ▶