

Multivector reversion sign

(Wilson, 2022)

Let A be a k -blade. Its reverse is $\tilde{A} = \mathfrak{s}_k A$ where the *reversion sign* is defined by

$$\mathfrak{s}_k := (-1)^{\binom{k}{2}} = (-1)^{\frac{(k-1)k}{2}}$$

which is the sign of the permutation $(1, \dots, k) \rightarrow (k, \dots, 1)$.

k	0	1	2	3	4	5	6	7	8	9	10	11
\mathfrak{s}_k	+	+	-	-	+	+	-	-	+	+	-	-
\mathfrak{s}_{k+1}	+	-	-	+	+	-	-	+	+	-	-	+
$\mathfrak{s}_k \mathfrak{s}_{k+1}$	+	-	+	-	+	-	+	-	+	-	+	-
$\mathfrak{s}_{k-1} \mathfrak{s}_k$	-	+	-	+	-	+	-	+	-	+	-	+

Lemma. $\mathfrak{s}_k \mathfrak{s}_{k+1} = (-1)^k$, $\mathfrak{s}_{k-1} \mathfrak{s}_k = -(-1)^k$, $\mathfrak{s}_k \mathfrak{s}_{k+2} = -1$.

References

Wilson, J. (2022). *Geometric Algebra for Special Relativity and Manifold Geometry*.
<https://doi.org/10.26686/wgtn.21185911>