# Multivector reversion sign

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 $(1, ..., k) \to (k, ..., 1)$.

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