0.1 Indefinite (pseduo) and split orthognal groups $O(n, m, F)$

0.1.1 Recap: Metric-preserving transformations

The bilinear form is:

$u^T M v$

The transformations which preserve this are:

$P^T M P = M$

0.1.2 The metric

If the metric is:

$$M = \begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Then we have the indefinite orthogonal group $O(3, 1)$

0.1.3 The split orthogonal group

Where $n = m$ we have the split orthogonal group.

$O(n, n, F)$

0.1.4 Signatures