

Definition (Special orthogonal group $SO(n)$). The special orthogonal group of order n , written $SO(n)$, is the group of $n \times n$ square matrices that satisfy

$$\mathbf{M}\mathbf{M}^{\top} = \mathbf{M}^{\top}\mathbf{M} = \mathbb{1}$$

and $\det(\mathbf{M}) = 1$.