

**Definition** (General orthogonal group  $O(n)$ )

The general orthogonal group of order  $n$ , written  $O(n)$ , is the group of  $n \times n$  square matrices that satisfy

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