Topological facts about orthogonal groups

- $\mathrm{SO}(n)$ is connected (Lawson & Michelsohn, 1989)
- $\mathrm{SO}(p, q)$ for $p, q \geq 1$ has exactly two connected components lawson1989
- $\mathrm{Spin}(V, g)$ is a universal cover of $\mathrm{SO}(V, g)$

References

Lawson, H. B., & Michelsohn, M.-L. (1989). *Spin Geometry* (Issue 38). Princeton University Press.