

# Riemannian Holonomy and Algebraic Geometry

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ABSTRACT

To any Riemannian manifold of dimension  $n$  is associated a closed subgroup of  $SO(n)$ , the holonomy group; this is one of the most basic invariants of the metric. A famous theorem of Berger gives a complete (and rather small) list of the groups which can appear. Surprisingly, the compact manifolds with holonomy smaller than  $SO(n)$  are all related in some way to Algebraic Geometry. I will explain how this occurs and how this gives rise to deep problems in Algebraic Geometry.