Berger's Classification of Riemannian Holonomies

MA 333 Final Presentation

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Introduction

Holonomy

- We define the holonomy group Hol(M, g) of the Levi-Civita connection on a Riemannain manifold (M, g) as the group of parallel transport endomorphisms P_γ for loops γ based on a fixed endpoint a_0.

$$P_\gamma \in \mathrm{End}(TM)$$

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Reducible Spaces

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Symmetric Spaces

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Normal Holonomy Theorem

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afd

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Berger's Holonomy Theorem

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Some Special Holonomies

Kähler manifolds ($\mathrm{Hol}^0 U(n)$)

Calabi-Yau manifolds (SU(n))

Thanks!