

# Lorentzian Spin Manifolds with “many” Parallel Spinors

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20. Juni 2011

## Abstract

During last semester’s talk, we introduced the notion of a Killing spinor and defined  $\kappa(M, \lambda) := \frac{\dim S(\lambda)}{\text{rank} S}$ , where  $S$  is the spinor bundle over a semi-Riemannian spin manifold and  $S(\lambda)$  is the vector space of Killing spinors with Killing number  $\lambda$ . We then considered some cases of a given lower boundary for  $\kappa(M, \lambda)$  and the consequences thereof.

During this talk, we will consider the special case of a Lorentzian spin manifold with  $\kappa(M, 0) =: \kappa(M) > \frac{1}{2}$ . Using some aspects of holonomy theory, we will show that such a manifold has to be flat.