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Parallel Quaternionic Spinors and Riamnnian holonomy

Spin manifolds are distinguished among oriented smooth manifolds by admitting a principal bundle double-covering their orthonormal-frame bundle, which gives rise to new vector bundles whose sections are called spinors. The condition can be relaxed to allow complex-spin structures (well-known due to Seiberg–Witten theory) and, more generally, quaternionic-spin structures. I will describe the geometric consequences of the existence of a parallel spinor on quaternionic-spin manifolds from the holonomy view-point, and how this generalizes the spin and complex-spin cases.