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Special Spinors and 3-Contact Geometries

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Abstract: Special spinors play a key role in differential geometry, with beautiful (and often surprising) connections to many areas within the subject. The most famous examples are Riemannian Killing spinors, which are by now well understood to occur only in certain very special situations, and whose existence imposes strong geometric constraints on the underlying manifold. Various generalizations have been studied over the past several decades, but the problem of reliably producing examples of globally defined spinor fields in dimension >8 remains difficult. In this talk I will discuss the current state of the art as it relates to 3-Sasakian manifolds and their generalizations. In particular, I will explain how 3-Sasakian structures may be explicitly recovered from Killing spinors, and introduce a new class of interesting spinors on 3-(α, δ)-Sasaki manifolds of arbitrary dimension which are not related to Killing spinors by deformations. Includes joint work with Ilka Agricola.

