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Geometry with Torsion and Symmetry

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Metric connections for which the torsion is skew-symmetric in all arguments are of particular interest also in theoretical physics and they correspond precisely to those metric connections that have the same geodesics as the Levi-Civita connection. For example, the target space of supersymmetric sigma models with Wess-Zumino term carries a geometry of a metric connection with skew-symmetric torsion. In my talk, I will review some general results on the geometry of a metric connection with skew-symmetric torsion. In particular, I will focus on special geometries and on the homogeneous setting.