

SEMINARIO DI GEOMETRIA E ALGEBRA

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Quaternion skew-Hermitian geometry

Abstract. We consider the geometry of manifolds equipped with quaternion- or hypercomplex skew-Hermitian structures. These structures can be seen as either real manifolds equipped with a certain kind of quaternion-valued 2-forms, or as almost quaternionic manifolds equipped with compatible almost symplectic forms. We consider their first order integrability conditions, and in particular, we show that the torsion modules of these geometries contain equivalent summands, which in principle allows for multiple in-equivalent normalization conditions. This leads us to construct explicit canonical connections, and we develop a uniform normalization condition which realize these connections as minimal, hence giving rise to first order differential invariants. We also give interpretations of these invariants in terms of the underlying structures. Joint work with I. Chrysikos and J. Gregorovic.



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