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Pseudo-Riemannian metrics and para-hypercomplex structures. Preliminary report.

Para-hypercomplex structure is a triple (I, S, T) of anti-commuting endomorphisms, where I is a complex structure and S and T are product structures. A natural choice of compatible metric is one for which I, S, T are skew-symmetric. Such metric is called para-hyperhermitian and has split signature.

In this talk we discuss the geometry of the para-hyperhermitian structures. First we look at the existence problem on compact complex surfaces. Then we present a quotient construction and show that they also naturally appear on some moduli spaces. (Received February 19, 2010)