Gauge transformation for twisted spectral triple

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Twisted spectral triples have been introduced by Connes and Moscovici to deal with type III algebras. We shall first see that the twisting easily adapts to the real structure, yielding a twisted version of the first order condition. Furthermore, the grading operator allows to associate a twisted partner to any (real) graded spectral triple. By «twisting partner », one intends a (real) graded twisted spectral triple with the same Hilbert space and Dirac operator as the initial triple.
Such twisted-partners are relevant for physics, for they yields theories « beyond the standard model », that include the extra-scalar field required to stabilize the electroweak vacuum, and to make the computation of the Higgs mass in noncommutative geometry compatible with its experimental value. The novelty of the the twisted approach is that, in addition, one also obtains a new vector field.
Its origin can be traced back to the fluctuation of the commutative part of the geometry which - unlike the non-twisted case - are non-necessarily zero.
Finally we will study how to implement a gauge transformation in a twisted spectral triple.