1048-18-59   **Rafael Diaz*** (`ragadiaz@gmail.com`). *N-differential graded algebras: examples and applications.*
Introduced by Meyer in the 40's and revived by Kapranov in the 90's the theory of N-complexes is gradually attaining its due place in homological algebra. A fundamental task is to find out the analogue for the notion of differential graded algebras in the context of N-complexes. Kerner proposed the notion of q-differential graded algebras, which are associative graded algebras provided with a degree 1 linear map d such that $d^N = 0$ and the q-deformed Leibnitz rule holds. Another option is that of N-differential graded algebras (N-dga) which are graded associative algebras provided with a degree 1 linear map such that $d^N = 0$ and the usual Leibnitz rule holds. We show that there are plenty of examples of N-dga arising naturally in algebra differential geometry, and topology. We also show that there are interesting theoretical results concerning N-dga, for example there is an equation called the (N, M) Maurer-Cartan equation which controls deformations of a N-dga into a M-dga. The theory of N-dga may lead to the discovery of new forms of infinitesimal symmetries, for example we discuss and provide examples of Lie 3-algebroids. Finally, we report on a homotopical generalization of the notion of N-dga. (Received January 19, 2009)