A noncommutative version for the SU(2) Skyrme model

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Recently we have proposed a formalism to generalize the quantization by deformation in order to explore, with a new insight, how the Noncommutative (NC) geometry can be introduced into a commutative field theory. To accomplish this, a systematic way to introduce NC geometry into commutative systems, based on the symplectic approach and the Moyal product is presented. Further, this method describes precisely how to obtain a lagrangian description for the NC version of the system. We have used our approach in two well known systems, the chiral oscillator and some nondegenerated classical mechanics. We computed precisely the NC contributions through this generalized symplectic method and obtained exactly the actions in the NC space found in the literature. The SU(2) Skyrme model is an effective theory that describes the weakly interacting mesons in the chiral limit resulting from the more fundamental theory for strong interactions (QCD) in the limit when the number of colors is taken very large. The collective semiclassical approach leads to the isospin quantum corrections to baryon properties. This process reduces the SU(2) Skyrme model to that of a nonrelativistic particle constrained over a sphere. In this work, we intend to obtain a lagrangian description for the NC version of the SU(2) Skyrme Model.