

1024-16-59

Frederick Carl Leitner* (lit1fred@ibiblio.org), Ben Gurion University, Department of Mathematics, POB 653, 84105 Be'er Sheva, Israel. *Deformation Quantization of Schemes*. Preliminary report.

We discuss recent deformation quantization results in algebraic geometry. From the work of M. Kontsevich, one knows one can 'quantize' a Poisson structure on a smooth manifold M to obtain a non-commutative deformation of the algebra of functions on M , a so called 'star product'. One in fact obtains a bijection, up to gauge equivalence, between star products and formal Poisson structures on M . This result was extended to the case of a smooth separated scheme X by A. Yekutieli. However, this made use of a strong cohomological assumption, namely that the X was \mathcal{D} -affine.

Let us make the (significantly weaker) assumption that $\mathbf{H}^1(\mathcal{O}_X)$ and $\mathbf{H}^2(\mathcal{O}_X)$ vanish. We show that after introducing a slightly more general version of a formal Poisson structure on X , one obtains such a bijection. We state explicit conditions on when a generalized Poisson structure is equivalent to the usual notion of a Poisson structure. We also describe, conjecturally, what happens when all cohomological assumptions on X are dropped.

(Joint work with A. Yekutieli) (Received December 20, 2006)