

Noncommutative projective geometry behind the algebra S_q

Anar Dosi

Middle East Technical University Northern Cyprus Campus, Guzelyurt, TRNC

February 12, 2015, 16:00, Istanbul

dosiev@yahoo.com

In the present talk we discuss noncommutative projective schemes within Kapranov's model of noncommutative algebraic geometry. The projective NC-space \mathbb{P}_q^n represents the universal enveloping (graded) algebra $S_q = \mathcal{U}(\mathfrak{g}_q(\mathbf{x}))$ of the free nilpotent Lie algebra $\mathfrak{g}_q(\mathbf{x})$ of index q generated by $\mathbf{x} = (x_0, \dots, x_n)$. We describe the NC-complete subschemes of \mathbb{P}_q^n for $q = 2$ based on differential chains in S_q . In the general case we propose the functor $B(\mathbb{P}^n, f_q, \mathcal{O}(-2), \dots, \mathcal{O}(-q-1))$ in terms of the twisted sheaves $\mathcal{O}(-2), \dots, \mathcal{O}(-q-1)$ on \mathbb{P}^n to restore the coordinate ring of \mathbb{P}_q^n which is reduced to S_q , and finally calculate the related cohomology groups $H^i(\mathbb{P}_q^n, \mathcal{O}_q(d)), i \geq 0$.