

**Vancliff, Michaela**

**Primitive and Poisson spectra of twists of polynomial rings.** (English) Zbl 0939.16018  
*Algebr. Represent. Theory* 2, No. 3, 269-285 (1999).

In this paper families of flat deformations of polynomial algebras  $S = \mathbb{C}[x_1, \dots, x_n]$  and of group algebras  $\mathbb{C}[x_1^{\pm 1}, \dots, x_n^{\pm 1}]$  are studied. The non-commutative deformed algebras are obtained by twisting the commutative multiplication using an automorphism  $\sigma$  of  $\mathcal{P}^{n-1}$ , so that a Poisson bracket is induced on  $S$ . The focus of the paper examines when the primitive ideals of the deformed algebra are in bijection with the symplectic leaves associated with the Poisson structure on  $S$ . An answer is obtained (for “generic”  $\sigma$ ) in the case where the symplectic leaves are algebraic varieties. The work is motivated in part by the description of the prime spectrum of the quantized function algebras  $\mathcal{O}_q(G)$  (for  $G$  semisimple and  $q$  generic) obtained by *A. Joseph* [*J. Algebra* 169, No. 2, 441-511 (1994; [Zbl 0814.17013](#))], and so appropriately ends by applying the insights obtained to the prime spectrum of  $\mathcal{O}_q(M_2(\mathbb{C}))$ , the coordinate ring of quantum  $2 \times 2$  matrices.

Reviewer: [K.A.Brown](#) (Glasgow)

**MSC:**

- [16S80](#) Deformations of associative rings
- [17B37](#) Quantum groups (quantized enveloping algebras) and related deformations
- [16W10](#) Rings with involution; Lie, Jordan and other nonassociative structures
- [16S36](#) Ordinary and skew polynomial rings and semigroup rings
- [14A22](#) Noncommutative algebraic geometry
- [14E07](#) Birational automorphisms, Cremona group and generalizations

Cited in **10** Documents

**Keywords:**

twisted homogeneous coordinate rings; Poisson manifolds; flat deformations; polynomial algebras; group algebras; Poisson brackets; primitive ideals; deformed algebras; symplectic leaves; prime spectra; quantized function algebras; coordinate rings; quantum  $2 \times 2$  matrices

**Full Text:** [DOI](#)