

# Serre's theorem for skew $PBW$ extensions

Oswaldo Lezama

Armando Reyes

Grupo de Álgebra Conmutativa Computacional - SAC<sup>2</sup>

Departamento de Matemáticas

Universidad Nacional de Colombia, Sede Bogotá

## Abstract

In this talk we prove that if  $R$  is a left Noetherian and left regular ring such that all finitely generated projective left  $R$ -modules are stably free, then the same is true for any bijective skew  $PBW$  extension  $A$  of  $R$ . As application, we will see that skew  $PBW$  extensions and its localizations include a wide variety of rings and algebras of interest for modern mathematical physics such as  $PBW$  extensions, well known classes of Ore algebras, operator algebras, quantum algebras, generalized Weyl algebras (hyperbolic algebras), quadratic algebras in 3-variables, diffusion algebras, skew quantum polynomials, among many others.

*Key words and phrases.* Noetherian and regular noncommutative rings, graded rings and modules,  $PBW$  extensions, quantum algebras, stably free modules, Serre's theorem.

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