Classification of locally free sheaf bimodules of rank 2 over the projective line

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This talk is based on the joint work with Shinnosuke Okawa and Kazushi Ueda. To complete the fundamental project in noncommutative algebraic geometry, namely, Artin's project on the classification of noncommutative surfaces, it is essential to classify quantum ruled surfaces. In this talk, we will explain some strategies to classify quantum Hirzebruch surfaces, which are defined to be quantum ruled surfaces over the projective line. It reduces to classify locally free sheaf bimodules of rank 2 over the projective line. Here, (commutative) algebraic geometry and (Cohen-Macaulay) representation theory are basic tools.

References

[1] M. Artin, Some problems on three-dimensional graded domains, representation theory and algebraic geometry, LMS Lecture Note Series 238 Cambridge Univ. Press (1997), 1-19

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