

Homological methods in the computation of complex algebraic curves on noncommutative rings

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Abstract

An important theorem of J. L. Burchnell and T. W. Chaundy establishes that given two commuting differential operators P and Q we can find a complex algebraic curve with equation $F(\mathbf{x}, \mathbf{y}) = 0$ such that inserting P and Q for \mathbf{x} and \mathbf{y} , respectively, we obtain $F(P, Q) = 0$. Actually, the points on this curve have coordinates which are exactly the eigenvalues associated with the operators P and Q . Our purpose in this talk is to present a generalization of this result for the general case of noncommutative rings. Part of these results are joint with Héctor Suárez.