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Title: *Some NP complete problems based on algebra and algebraic geometry over finite fields.*

Abstract: We define fiber bundles over the affine space of matrices of a given size and show that the problem of determining membership in the induced bundle over determinantal varieties is an NP complete problem. Using this membership problem, we then create families of univariate polynomials over finite fields and show that the question of membership for elements of field in the union of roots for a given family is NP-complete. Finally, we show that the existence of a Turing machine which can solve these problems in polynomial time implies that certain high degree univariate polynomials must have very low algebraic complexity.