

Meeting: 1004, Bowling Green, Kentucky, SS 11A, Special Session on Commutative Ring Theory, I

1004-11-277 **Jean-Claude Evard*** (Jean-Claude.Evard@wku.edu), Jean-Claude Evard, Western Kentucky University, Department of Mathematics, Bowling Green, KY 42101-3576, USA. *Polynomials whose roots and critical points are integers*. Preliminary report.

The problem of finding properties, characterizations, and methods of construction of polynomials whose coefficients, roots, and critical points are integers is on the list of unsolved problems published in the issue of December 1999 of The American Mathematical Monthly. Such polynomials are called nice polynomials. The most important paper was published by Ralph Buchholz and James MacDougall in the Journal of Number Theory in January 2000. Their paper contains a comprehensive bibliography on the subject. In our talk, we will present a general method to deal with nice polynomials that has been very successful. Thanks to this method, we have established general properties of nice polynomials, which have considerably increased the speed of the computer search for examples. We will also present extensions of our results from the ring of integers to more general rings satisfying some general conditions. Our method also gives an expression of nice polynomials as points with integer coordinates on an algebraic variety, which opens the subject to the methods of Algebraic Geometry. (Received February 07, 2005)