

TEMPLE UNIVERSITY MATHEMATICS COLLOQUIUM

William Gasarch

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will speak on

The polynomial van der Waerden theorem

ABSTRACT: The classical van der Waerden theorem is a result about the existence of arithmetic progressions in sets; it can be stated as follows: Given a c -coloring COL of \mathbb{Z} (i.e., a partition of \mathbb{Z} into c disjoint subsets) and a positive integer k , there exists $a, d \in \mathbb{Z}$ with $d \neq 0$ such that $COL(a) = COL(a + d) = COL(a + 2d) = \cdots = COL(a + kd)$. The polynomial van der Waerden theorem, proven by Bergelson and Leibman, is a generalization which uses polynomials in d instead of the linear polynomials $d, 2d, \dots, kd$.

The original proof of the polynomial van der Waerden theorem involved ergodic techniques and was somewhat difficult. Subsequently, an elementary proof was given by Walters. We will present a simpler version of his proof and discuss even further generalizations.

MONDAY, OCTOBER 23, 2006

LECTURE AT 4:00 PM (#)

COFFEE, TEA, AND REFRESHMENTS FROM 3-5 PM.

ROOM 617, WACHMAN BUILDING
DEPARTMENT OF MATHEMATICS