SPEAKER TITLES/ABSTRACTS

Michael Young

AIM

Bio:

Michael Young is an Associate Professor of Mathematics at Iowa State University. He had his PhD in Mathematical Sciences from Carnegie Mellon University. He studies topics in Discrete Mathematics, including graph theory, combinatorics, and game theory. He has also begun working in the equity aspects of mathematics education.

Title:

Rainbow Numbers for $x_1 + x_2 = kx_3$ in $\mathbb{Z}_n$.

Abstract:

For positive integers n and k, the *rainbow number* $rb(\mathbb{Z}_n, k)$ is the fewest number of colors needed to guarantee a rainbow (i.e. distinctly colored) triple of the equation $x_1 + x_2 = kx_3$ for cyclic groups $\mathbb{Z}_n$. Butler et. al. determined the rainbow number for 3-term arithmetic progressions ($k = 2$). In this talk, we will discuss the rainbow numbers for other values of k.

First we consider the Schur equation ($k = 1$) and find that $rb(\mathbb{Z}_p, 1) = 4$ for all primes greater than 3 and that $rb(\mathbb{Z}_n, 1)$ can be calculated exactly from the prime factorization of n. For a general k we find the exact value of $rb(\mathbb{Z}_p, k)$, for every prime p and positive integer k. We also find that when k is prime, $rb(\mathbb{Z}_n, k)$ can be calculated exactly from the prime factorization of n.