

Prime Labelings of Zero-Divisor Graphs

Brad Fox

*Department of Mathematics and Statistics
Austin Peay State University, USA*

The *zero-divisor graph* of a commutative ring R , denoted by $\Gamma(R)$, has the set of its non-zero, zero-divisors as the vertices with edges connecting distinct vertices x and y if $xy = 0$. We investigate these graphs to determine the existence of a *prime labeling*, in which we label the vertices with distinct integers 1 to $|V(\Gamma(R))|$ so that any adjacent pairs have relatively prime labels. In this talk, we will develop prime labelings for zero-divisor graphs of some infinite families of rings, as well as show that there are infinitely many where a prime labeling does not exist. Some open problems and a conjecture for $\Gamma(\mathbb{Z}_n)$ will also be introduced.

foxb@apsu.edu