Review of: "Zero-Divisor Graphs of ℤ_n, their products and D_n"

J.V.S. Morales[1]

1 De La Salle University

Potential competing interests: No potential competing interests to declare.

The paper talked about zero-divisor graphs, denoted by $\Gamma(\mathrm{Z}_n)$, of the commutative ring Z_n. The paper studied properties of $\Gamma(\mathrm{Z}_n)$ in terms of perfectness, completeness, k-partition, complete k-partition, regularity, chordality, etc. The paper also explored related attributes of zero-divisor graphs $\Gamma(\mathrm{Z}_{n_1} \times \cdots \times \mathrm{Z}_{n_k})$ of a direct product of a finite number of commutative rings. The manuscript picked up from Smith (2016) who used the notion of type graphs to find all perfect $\Gamma(\mathrm{Z}_n)$. The manuscript then extended the notion of type graphs for $\Gamma(\mathrm{Z}_{n_1} \times \cdots \times \mathrm{Z}_{n_k})$ to find all perfect $\Gamma(\mathrm{Z}_{n_1} \times \cdots \times \mathrm{Z}_{n_k})$. As for the other properties, the paper found conditions on the integer n so that the zero-divisor graph $\Gamma(\mathrm{Z}_n)$ is complete, k-partite, complete k-partite, and chordal, respectively. The paper also determined the clique number of $\Gamma(\mathrm{Z}_n)$ and whether $\Gamma(\mathrm{Z}_n)$ has a simplicial vertex or not. In Chapter 4, the paper discussed how properties of the individual $\Gamma(\mathrm{Z}_{n_i})$ affect the properties of $\Gamma(\mathrm{Z}_{n_1} \times \cdots \times \mathrm{Z}_{n_k})$ in terms of completeness, complete-bipartiteness, chordality, and existence of simplicial vertices (among others). In Chapter 5, the paper discussed the notion of zero-divisor graph $\Gamma(D_n)$ of a partially ordered set or poset D_n and summarized various properties of $\Gamma(D_n)$.