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Amanda Burcroff* (burcroff@umich.edu). *Domination Parameters of the Unitary Cayley Graph of $\mathbb{Z}/n\mathbb{Z}$.*

The unitary Cayley graph of $\mathbb{Z}/n\mathbb{Z}$, denoted X_n , is the graph on $\{0, \dots, n-1\}$ where vertices a and b are adjacent if and only if $\gcd(a-b, n) = 1$. The total domination number of a graph G , denoted $\gamma_t(G)$, is the minimum cardinality of a set of vertices S such that every vertex of G is adjacent to a vertex of S . We answer a question of Defant and Iyer by constructing a family of infinitely many integers n such that $\gamma_t(X_n) \leq g(n) - 2$, where $g(n)$, the Jacobsthal function, is the minimum m such that every set of m consecutive integers contains an integer coprime to n . We determine the irredundance number, domination number, and lower independence number of certain direct products of complete graphs and give bounds for these parameters for any direct product of complete graphs. We provide upper bounds on the size of irredundant sets in direct products of balanced, complete multipartite graphs which are asymptotically correct for the unitary Cayley graphs of integers with a bounded smallest prime factor. (Received September 25, 2018)