Decycling Toeplitz Graphs, Some Subgraphs, and Generalized Petersen Graphs
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Let $S$ be a subset of $\{1, 2, 3, \ldots, n\}$, the Toeplitz graph $T^S_n$, has vertex set $V = \mathbb{Z}_n$, and two vertices $i$ and $j$ are adjacent when $|i - j \pmod{n}|$ is in $S$. A special type of Toeplitz graph is the Circulant graph. Given a positive integer $n$, and a set $S$ which is a subset of $\{1, 2, 3, \ldots, \lfloor n/2 \rfloor \}$ the circulant graph $C^S_n$ is the graph with vertex set $V = \mathbb{Z}_n$ and $ij$ is in the edge set if either $(i - j) \pmod{n}$ or $(j - i) \pmod{n}$ is in $S$. For $n \geq 3$ and $1 \leq k \leq \lfloor \frac{n-1}{2} \rfloor$, the Generalized Petersen graph $GP_{n,k}$ consists of an outer cycle $C_n$ on the vertices $\{v_0, v_1, \ldots, v_{n-1}\}$ and an inner circulant graph $C^S_n$ on the vertices $\{v^*_0, v^*_1, \ldots, v^*_{n-1}\}$, with corresponding pairs of vertices $(v^*_j \& v_j)$ adjacent. In this talk we will look at the decycling number (the minimum number of vertices which must be removed to render the remaining graph acyclic) of these graphs and some of their subgraphs.

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