

Decycling Toeplitz Graphs, Some Subgraphs, and Generalized Petersen Graphs

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Let S be a subset of $\{1, 2, 3, \dots, n\}$, the *Toeplitz graph* T_n^S , 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 $\{1, 2, 3, \dots, \lfloor \frac{n}{2} \rfloor\}$ the *circulant graph* C_n^S 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 $\{v_0, v_1, \dots, v_{n-1}\}$ and an inner circulant graph $C_n^{(k)}$ on the vertices $\{v_0^*, v_1^*, \dots, v_{n-1}^*\}$, 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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