HACETTEPE UNIVERSITY

December 20, 2023
Wednesday
15:30

Hacettepe University
Department of Mathematics
Yaşar Ataman Hall

DEPARTMENT OF
MATHEMATICS

GENERAL SEMINAR

SPEAKER

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TITLE

On Graphs All of Whose Total Dominating Sequences Have the Same Length

ABSTRACT

A sequence of vertices in a graph G without isolated vertices is called a total dominating sequence if every vertex v in the sequence has a neighbor which is adjacent to no vertex preceding v in the sequence, and at the end every vertex of G has at least one neighbor in the sequence. Minimum and maximum lengths of a total dominating sequence is the total domination number of G (denoted by $\gamma_t(G)$ and the Grundy total domination number of G (denoted by $\gamma_{gr}^t(t)$), respectively.
In this paper, we study graphs where all total dominating sequences have the same length.
For every positive integer k, we call G a total k-uniform graph if every total dominating sequence of G is of length k, that is, $\gamma_t(G) = \gamma_{gr}^t(t) = k$. We prove that there is no total k-uniform graph when k is odd. In addition, we present a total 4-uniform graph which stands as a counterexample for a conjecture by Gologranc et al. (2021) and provide a connected total 8-uniform graph.
Moreover, we prove that every total k-uniform, connected and false twin-free graph is regular for every even k. We also show that there is no total k-uniform chordal connected graph with $k \geq 4$ and characterize all total k-uniform chordal graphs.