



DEPARTMENT OF MATHEMATICS

FALL 2022
**COLLOQUIUM
SERIES**



ON THE (t, r) BROADCAST DOMINATION NUMBER OF GRAPHS

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Blessing, Insko, Johnson and Mauretour gave a generalization of the domination number of a graph G called the (t, r) broadcast domination number which depends on the positive integer parameters t and r . In this setting, a v in V is a broadcast vertex of transmission strength t if it transmits a signal of strength $t-d(u, v)$ to every vertex u in V with $d(u, v) < t$. Given a set of broadcast vertices S subset of V , the reception at vertex u is the sum of the transmissions from the broadcast vertices in S . The subset S of V is called a (t, r) broadcast dominating set if every vertex u in V has a reception strength $r(u) \geq r$ and for a finite graph G the cardinality of a smallest broadcast dominating set is called the (t, r) broadcast domination number of G . In this talk, we consider the infinite triangular grid graph and define efficient (t, r) broadcast dominating sets as those broadcasts that minimize signal waste. Our main result constructs efficient (t, r) broadcasts on the infinite triangular grid graph for all $t \geq r \geq 1$ and provides upper bounds for the (t, r) broadcast domination numbers for triangular matchstick graphs when (t, r) in $\{(2, 1), (3, 1), (3, 2), (4, 1), (4, 2), (4, 3), (t, t)\}$.

FRIDAY, OCTOBER 14, 2022 | 4:00 PM
BSS 166

FOR MORE INFO GO TO [HTTPS://MATH.HUMBOLDT.EDU/GET-INVOLVED/MATHEMATICS-COLLOQUIUM](https://math.humboldt.edu/get-involved/mathematics-colloquium)

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