ON VIZING’S CONJECTURE

BOŠTJAN BREŠAR
Faculty of Natural Sciences and Mathematics
University of Maribor, Slovenia
e-mail: bostjan.bresar@um.si

A long-standing Vizing’s conjecture [2] asserts that the domination number of the Cartesian product of two graphs is at least as large as the product of their domination numbers, i.e., \( \gamma(G \Box H) \geq \gamma(G)\gamma(H) \). The problem was attacked by a number of authors by using various approaches or giving partial results of different nature. One of the most significant results related to the conjecture is the bound of Clark and Suen stating that

\[
\gamma(G \Box H) \geq \frac{1}{2} \gamma(G) \gamma(H).
\]

In this talk, I will present some recent results related to the conjecture, which appeared after the most recent survey on Vizing’s conjecture was published [1]. In particular, a lower bound on the domination number of the Cartesian product of graphs, which involves the 2-packing number \( \rho(G) \) of a graph \( G \), will be presented; it states that

\[
\gamma(G \Box H) \geq \frac{2\gamma(G) - \rho(G)}{3} \gamma(H),
\]

for any graphs \( G \) and \( H \).

**Keywords:** domination, Cartesian product, Vizing’s conjecture.

**AMS Subject Classification:** 05C69, 05C76.

**References**
