ON THE PACKING CHROMATIC NUMBER OF
LEXICOGRAPHIC PRODUCTS

Dragana Božović(1) and Iztok Peterin(1,2)

(1) Faculty of Electrical Engineering and Computer Science, University of Maribor
(2) Institute of Mathematics, Physics and Mechanics, Ljubljana

e-mail: dragana.bozovic@um.si, iztok.peterin@um.si

The packing chromatic number \( \chi_\rho(G) \) of a graph \( G \) is the smallest integer
\( k \) such that there exists a \( k \)-vertex coloring of \( G \) in which any two vertices
receiving color \( i \) are at distance at least \( i + 1 \). In this talk we present upper
and lower bound for the packing chromatic number of the lexicographic
product \( G \circ H \) of graphs \( G \) and \( H \). Both bounds coincide in many cases.
In particular this happens if \( |V(H)| - \alpha(H) \geq \text{diam}(G) - 1 \), where \( \alpha(G) \)
denotes the independence number of \( G \).

**Keywords:** packing chromatic number, lexicographic product of graphs.

**AMS Subject Classification:** 05C15, 05C12, 05C70, 05C76.

References

[1] D. Geller and S. Stahl, *The Chromatic Number and Other Functions of
the Lexicographic Product*, Journal of Combinatorial Theory Ser. B 19
(1975) 87–95.

D. F. Rall, *Broadcast chromatic numbers of graphs*, Ars Combin. 86