ON THE CROSSING NUMBERS OF PRODUCT OF CYCLE AND POWER GRAPHS

DANIELA KRAVECOVÁ AND JANA PETRILLOVÁ

Faculty of Electrical Engineering and Informatics Technical University of Košice e-mail: daniela.kravecova@tuke.sk, jana.petrillova@tuke.sk

The crossing number, cr(G), of a graph G is the minimal number of pairwise intersections of nonadjacent edges in any drawing of G in the plane. Computing of the crossing number of a given graph is in general very difficult problem. In [1], Garey and Johnson stated that this problem is NP - complete. The exact values of the crossing numbers are known only for some families of special graphs. Patil and Krishnnamurthy, in [3], gave the family of graphs for which power graphs have crossing number one.

This talk deals with one special class of Cartesian products of two graphs, more precisely the second power of the path with the cycle. It was proved in [2] that $cr(P_n^2 \Box C_3) = 3n - 3$. We generalize this result and we give the exact values of the crossing numbers for some other graph of the same type.

Keywords: graph, drawing, crossing number, Cartesian product, power graph.

AMS Subject Classification: 05C10, 05C38.

References

- M. R. Garey, D. S. Johnson, Crossing number is NP-complete, SIAM J. Algebraic and Discrete methods 4 (1983) 312–316.
- [2] M. Klešč, D. Kravecová, The crossing number of $P_n^2 \Box C_3$, Discrete Math. (2011), doi:10.1016/j.disc.2011.03.028.
- [3] H. P. Patil, D. Krishnnamurthy, On power graphs with crossing number one, Discuss. Math. 12 (1992) 27-37.