On the crossing numbers of Cartesian products of cycles with graphs on five vertices

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(joint work with Marián Klešč)

The *crossing number* $\mathrm{cr}(G)$ of a graph G is the smallest number of pairs of nonadjacent edges that intersect in any drawing of G in the plane. The crossing numbers of Cartesian products of cycles with fifteen graphs of order five are known. In the talk, we present the exact values for the crossing numbers of Cartesian products of cycles with other two graphs on five vertices. One of them is the complete bipartite graph $K_{2,3}$ and the other is obtained from $K_{2,3}$ by adding one edge joining the vertices of degree three.