

## On 2-Limited Packings of Complete Grid Graphs

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For a fixed integer  $k$ , a set of vertices  $B$  of a graph  $G$  is a  $k$ -limited packing of  $G$  provided that the closed neighbourhood of any vertex in  $G$  contains at most  $k$  elements of  $B$ . The size of a largest possible  $k$ -limited packing in  $G$  is denoted  $L_k(G)$  and is the  $k$ -limited packing number of  $G$ . In this paper, we investigate the 2-limited packing number of Cartesian products of paths. We show that the function  $\Delta[L_2(P_k \square P_n)] = L_2(P_k \square P_n) - L_2(P_k \square P_{n-1})$  is eventually periodic, and thereby give closed formulas for  $L_2(P_k \square P_n)$ ,  $k = 1, 2, \dots, 5$ . The techniques we use are suitable for establishing other types of packing and domination numbers for Cartesian products of paths and, more generally, for graphs of the form  $H \square P_n$ . This is joint work with R.P. Gallant.