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Jesse T. Geneson* (jgeneson@fas.harvard.edu). *Extremal Functions of Forbidden Double Permutation Matrices.*

We say a 0 – 1 matrix A avoids a pattern P if no submatrix of A can be transformed into P by changing some ones to zeroes. We call P an m -tuple permutation matrix if P can be obtained by replacing each column of a permutation matrix with m copies of that column. In this paper, we investigate $n \times n$ matrices that avoid P and the maximum number $ex(n, P)$ of ones that they can have. We prove a linear bound on $ex(n, P)$ for any 2-tuple permutation matrix P , resolving a conjecture of Keszegh (J. Combin. Theory Ser. A (2008), doi: 10.1016/j.jcta.2008.05.006). Using this result, we obtain a linear bound on $ex(n, P)$ for any m -tuple permutation matrix P . Additionally, we demonstrate the existence of infinitely many minimal non-linear patterns, resolving another conjecture of Keszegh from the same paper. (Received September 11, 2008)