

1164-05-207

**Amin Bahmanian\***, Campus Box 4520, Normal, IL 61790. *Ryser's Theorem for  $\rho$ -latin Rectangles.*

Let  $L$  be an  $n \times n$  array whose top left  $r \times s$  subarray is filled with  $k$  different symbols, each occurring at most once in each row and at most once in each column. We find necessary and sufficient conditions that ensure the remaining cells of  $L$  can be filled such that each symbol occurs at most once in each row and at most once in each column, and each symbol occurs a prescribed number of times in  $L$ . The case where the prescribed number of times each symbol occurs is  $n$  was solved by Ryser (Proc. Amer. Math. Soc. 2 (1951), 550–552), and the case  $s = n$  was settled by Goldwasser et al. (J. Combin. Theory Ser. A 130 (2015), 26–41). Our technique leads to a very short proof of the latter. (Received January 18, 2021)