

# Existence of Some Signed Magic Arrays

Abdollah Khodkar, Christian Schulz\*, Nathan Wagner

*Department of Mathematics, Rose-Hulman Institute of Technology, Terre Haute, IN 47803*  
schulzcc@rose-hulman.edu

We consider the notion of a *signed magic array*, which is an  $m \times n$  rectangular grid with the same number of filled cells  $s$  in each row and the same number of filled cells  $t$  in each column, filled with a certain set of numbers that is symmetric about the number zero, such that every row and column has a zero sum. We attempt to make progress toward a characterization of for which  $(m, n, s, t)$  there exists such an array. This characterization is complete in the case where  $n = t$  and in the case where  $n = m$ ; we also characterize three-fourths of the cases where  $n = 2m$ .