

A partition of a square matrix M is said to be equitable if all the blocks of the partitioned matrix have constant row sums and each of the diagonal blocks is of square order. A quotient matrix Q of a square matrix M corresponding to an equitable partition is a matrix whose entries are the constant row sums of the corresponding blocks of M . A quotient matrix is a useful tool to find some eigenvalues of the matrix M . I will discuss some matrices whose eigenvalues are the eigenvalues of M and which are not the eigenvalues of a quotient matrix. Using this result we find eigenvalue localization theorems for matrices having an equitable partition. In particular, we find eigenvalue localization theorems for stochastic matrices and give a suitable example to compare with the existing results.