



BLOCK REPRESENTATION AND SPECTRAL PROPERTIES OF CONSTANT SUM MATRICES*

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Abstract. An equivalent representation of constant sum matrices in terms of block-structured matrices is given in this paper. This provides an easy way of constructing all constant sum matrices, including those with further symmetry properties. The block representation gives a convenient description of the dihedral equivalence of such matrices. It is also shown how it can be used to study their spectral properties, giving explicit formulae for eigenvalues and eigenvectors in special situations, as well as for quasi-inverses when these exist.

Key words. Constant sum matrix, Eigenvalue, Quasi-inverse matrix.

AMS subject classifications. 15B99, 15B51, 15A18, 15A09.

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