

**Don, F. J. Henk**

**On the symmetric solutions of a linear matrix equation.** (English) Zbl 0622.15001  
Linear Algebra Appl. 93, 1-7 (1987).

Let  $A$  be a real  $m \times n$ -matrix. An  $n \times m$ -matrix  $G$  is called a minimum-norm reflexive generalized inverse (MNRGI) of  $A$ , if the following relations hold: (i)  $AGA = A$ , (ii)  $GAG = G$ , (iii)  $GA = (GA)^T$ . Partitioned MNRGIs are used to derive a necessary and sufficient condition for the consistency of the linear system (\*)  $AX = B$ ,  $X = X^T$ , and to establish the explicit form of the general solution of (\*) in that case. Furthermore, the dimension of the solution space to (\*) is computed.

Reviewer: [A.R.Kräuter](#)

**MSC:**

[15A09](#) Theory of matrix inversion and generalized inverses  
[15A24](#) Matrix equations and identities

Cited in **48** Documents

**Keywords:**

[matrix equation](#); [symmetric solution](#); [generalized inverse](#); [Kronecker product](#); [minimum-norm reflexive generalized inverse](#); [consistency](#)

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