1 SUMMARY

Given that \( A \) is a symmetric \( n \times n \) matrix and given that \( B \) is the \( (n-1) \times (n-1) \) matrix which is the inverse of the matrix obtained by deleting the last row and column of \( A \), to replace \( B \) by the inverse of \( A \).


2 HOW TO USE THE PACKAGE

2.1 The argument list and calling sequence

*The single precision version*

CALL MB05A (A,B,N,IDIM)

*The double precision version*

CALL MB05AD (A,B,N,IDIM)

\( A \) is a REAL (DOUBLE PRECISION in the D version) array for the elements of the matrix \( A \).

\( B \) is a REAL (DOUBLE PRECISION in the D version) for the elements of \( B \).

\( N \) is an INTEGER giving the dimension of \( A \).

\( IDIM \) is an INTEGER specifying the first dimensions of the arrays \( A \) and \( B \), so that in the calling routine there will normally be a statement of the form

\[
\text{DIMENSION A(IDIM, ), B(IDIM, )}
\]

3 GENERAL INFORMATION

Use of common: None.

Workspace: None.

Input/output: None.

Restrictions:

\( N \geq 2 \)

4 METHOD

The matrix \( A \) and the required \( B \) are partitioned in the following way:

\[
\begin{bmatrix}
A_\alpha & \alpha' \\
\alpha & a
\end{bmatrix}
\]

\[
\begin{bmatrix}
B_\beta \\
\beta
\end{bmatrix}
\]

and the required parts of \( B \) are computed as follows: if

\( y = A_\beta \alpha \)

then

\( b = [a - \alpha' y]^{-1} \)

\( \beta = -by \)
and

\[ B_0 = A_0^{-1} - \beta y. \]