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Eigenvalue Routine By Sturm Sequence Method

The Problem:

The solution of eigenvalue problems by hand calculations is very long and complex, and previous computer programs often lacked the accuracy required in the program solution.

The solution:

This program was written to use the Sturm Sequence Method of solving eigenvalue problems.

How it's done:

This computer program has been generated for the efficient solution of certain broad classes of eigenvalue problems. Extensive applications of the procedure are envisioned in the analysis of many engineering problems such as natural frequency and stability analysis of practical structures by the finite element technique. The procedure used in this program fully exploits the banded nature of the associated matrices and further enables the user to compute either all the roots or any specific ones desired. Thus once the range of values for the roots are specified, the routine computes the first required NR roots lying within the range. The routine also computes repeated roots as well as the eigenvectors.

Storage requirements are modest, since only one working store of moderate dimension is needed for the solution. Further special storage options enable storing only the nonzero elements of the associated main matrix of the eigenvalue problem.

Notes:
1. This program was written in FORTRAN V for use on the UNIVAC-1108 computer.
2. Inquiries concerning this program should be directed to:

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