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NASA TECH BRIEF

NASA Pasadena Office

Eigenfunction Solution of Damped Structural Systems: DAMP

The problem:

A method was needed for determining eigenfunction solutions of discrete damped structures, including spinning ones.

The solution:

A computer program was developed using a combination of procedures that would accurately solve this type of problem, while fully exploiting the banded configuration of the associated matrices.

How it's done:

The program isolates the corresponding real roots of the desired complex ones, applying the Sturm sequence technique on the relevant undamped free vibration formulation, when the bounds of each such individual root are obtained. The algebraic values of the middle points of each such bound are used to locate accurately the individual desired roots and associated vectors of the damped system by employing a special numerical scheme, based on a combined Sturm sequence and inverse iteration technique.

Notes:

1. This program was written in FORTRAN V for a UNIVAC 1108 computer.
2. Inquiries concerning this program should be directed to:

   COSMIC
   112 Barrow Hall
   University of Georgia
   Athens, Georgia 30601
   Reference: NPO-13480

Source: K. K. Gupta of
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