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NASA TECH BRIEF

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Symmetrical Two Dimensional Scattering Program

The problem:

To compute the scattering properties of an electric or magnetic plane wave incident upon one or more cylindrical objects with a midplane of symmetry.

The solution:

A computer program which solves the integral equation for the currents on conducting cylinders. These currents are induced by an incident E-wave or an incident H-wave. This program also takes advantage of the symmetry of the geometry.

How it's done:

The axis of the cylindrical objects is assumed to be parallel to the Z-axis. Therefore, the cross section in the X-Y plane is sufficient to describe the problem geometry. Each cylinder is described by a set of line segments. The end-points of each line segment must conform to the right-hand screw (i.e., counter-clockwise in the X-Y plane).

Restrictions on the program are as follows:

1. The number of specified line segments cannot exceed 180.
2. The user must supply his own incident-field routine.
3. All angles are assumed to be in units of degrees.
4. All distances are assumed to be in units of wavelengths.

Notes:

1. This program is written in FORTRAN V for use on the UNIVAC-1108 Exec 8 computer.
2. Program number NPO-11579 is the IBM-7094 version of this program, written in FORTRAN IV
3. COSMIC also has available program numbers NPO-11576 and NPO-11577 which are the UNIVAC-1108 and IBM-7094 versions, respectively, of the Non-Symmetrical Two Dimensional Scattering Program.
4. Additional information may be obtained from:

   COSMIC
   Barrow Hall
   University of Georgia
   Athens, Georgia 30601
   Reference: B71-10008

Patent status:

No patent action is contemplated by NASA.

Source: W.V.T. Rusch and J. Hatfield of
Jet Propulsion Laboratory
under contract to
NASA Pasadena Office
(NPO-11578 & NPO-11579)

Category 09

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