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Non-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.

The solution:

A computer program, 2DSCAT, which solves the integral equation for the currents on conducting cylinders. These currents are induced by the incident E-wave or an incident H-wave.

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).

The subroutine, FIELD, assumes that an incident plane wave is perpendicular to the cylindrical surface. (If desired, the user can supply his own FIELD subroutine for other field computations.)

Restrictions on this program are as follows:

1. The number of specified line segments cannot exceed 100.
2. The user must supply his own FIELD and GEOM subroutines if he wishes to deviate from the standard subroutines supplied with 2DSCAT.

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-11577 is the IBM-7094 version of this program, written in FORTRAN IV.
3. COSMIC also has available program numbers NPO-11578 and NPO-11579 which are the UNIVAC-1108 and IBM-7094 versions, respectively, of the Symmetrical Two Dimensional Scattering Program.
4. Additional information may be obtained from:
 COSMIC
 Barrow Hall
 University of Georgia
 Athens, Georgia 30601
 Reference: B71-10007

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-11576 & 11577)

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