

PACKAGE ID - 000228SUN0001 INGRID*

KWIC TITLE - 3-D Mesh Generation Nonlinear Systems

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LIMITATION CODE -UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 09/01/1992 **PUBLICATION DATE** - 09/01/1992

DESCRIPTION - INGRID is a general-purpose, three-dimensional mesh generator developed for use with finite element, nonlinear, structural dynamics codes. INGRID generates the large and complex input data files for DYNA3D, NIKE3D, FACET, and TOPAZ3D. One of the greatest advantages of INGRID is that virtually any shape can be described without resorting to wedge elements, tetrahedrons, triangular elements or highly distorted quadrilateral or hexahedral elements. Other capabilities available are in the areas of geometry and graphics. Exact surface equations and surface intersections considerably improve the ability to deal with accurate models, and a hidden line graphics algorithm is included which is efficient on the most complicated meshes. The primary new capability is associated with the boundary conditions, loads, and material properties required by nonlinear mechanics programs. Commands have been designed for each case to minimize user effort. This is particularly important since special processing is almost always required for each load or boundary condition.

PACKAGE CONTENTS - Media Directory; Software Abstract; Installing INGRID on the SUN; UCRL-MA-109790 Draft; UCID-21620; UCID-21566, DRAFT; UCID-21798;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD Rom

METHOD OF SOLUTION - Geometries are described primarily using the index space notation of the INGEN program with an additional type of notation, index progression. Index progressions provide a concise and simple method for describing complex structures; the concept

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METHOD OF SOLUTION - (CONT) was developed to facilitate defining multiple regions in index space. Rather than specifying the minimum and maximum indices for a region, one specifies the progression of indices along the I, J, and K directions, respectively. The index progression method allows the analyst to describe most geometries including nodes and elements with roughly the same amount of input as a solids modeler.

COMPUTER - SUN

OPERATING SYSTEMS - UNIX

PROGRAMMING LANGUAGES - FORTRAN

SOURCE CODE AVAILABLE (Y/N) - Y

RELATED SOFTWARE - Interactive graphics in INGRID are patterned after TAURUS, a three-dimensional postprocessor, and MAZE, a two-dimensional mesh generator. Much of the coding from MAZE is directly incorporated in INGRID. The LLNL-developed DIGLIB graphics software used by the SUN version of INGRID is included with this version.

REFERENCES - M.A. Christon, D. Dovey, D.W. Stillamn, J.O. Hallquist, and R.B. Rainsberger, INGRID, A 3-D Mesh Generator for Modeling Nonlinear Systems, UCRL-MA-109790 Draft, September 1992; B.M. Wayne, INGRID Entering Material Specifications, UCID-21798, July 1989; R. Rainsberger, INGRID: By example a pictorial tutorial, UCID-21566, Draft, November 1988; R. Rainsberger, INGRID: Features and updates, UCID-21602, January 1988.

ABSTRACT STATUS - Abstract first distributed May 1986. SUN version submitted November 1988. Revised version submitted April 1994.

SUBJECT CLASS CODE - N

KEYWORDS -

COMPUTER PROGRAM DOCUMENTATION
I CODES
THREE-DIMENSIONAL CALCULATIONS
MESH GENERATION
FINITE ELEMENT METHOD
MECHANICAL STRUCTURES
NONLINEAR PROBLEMS
COMPUTER GRAPHICS

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/DP

PACKAGE TYPE - AS - IS