

PACKAGE ID - 000138MLTPL01 DYNA3D2000*

KWIC TITLE - Explicit 3-D Hydrodynamic FEM Program

AUTHORS - Lin, J.
Lawrence Livermore National Lab, CA (United States)

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

COMPLETION DATE - 05/23/2000 **PUBLICATION DATE** - 11/01/1993

DESCRIPTION - DYNA3D is a nonlinear explicit finite element code for analyzing 3-D structures and solid continuum. The code is vectorized and available on several computer platforms. The element library includes continuum, shell, beam, truss and spring/damper elements to allow maximum flexibility in modeling physical problems. Many materials are available to represent a wide range of material behavior, including elasticity, plasticity, composites, thermal effects and rate dependence. In addition, DYNA3D has a sophisticated contact interface capability, including frictional sliding, single surface contact and automatic contact generation.

PACKAGE CONTENTS - Procedures to make DYNA3D Executables; Software Abstract for DYNA3D2000* and DIGLIB; Installation Guides for SUN, and IBM; DYNA3D Code Practices and Developments (UCRL-ID-138654); Media Includes DYNA3D User Manual (UCRL-MA-107254), Media Directories, Source Codes, and Sample Problems for DYNA3D2000* and DIGLIB;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 1 CD ROM

METHOD OF SOLUTION - Discretization of a continuous model transforms partial differential equations into algebraic equations. A numerical solution is then obtained by solving these algebraic equations through a direct time marching scheme.

COMPUTER - MLT-PLTFM

OPERATING SYSTEMS - UNIX and UNICOS

PROGRAMMING LANGUAGES - FORTRAN 77

SOFTWARE LIMITATIONS - Recent software improvements have eliminated most of the user identified limitations with dynamic memory allocation and a very large format description that has pushed potential problem sizes beyond the reach of most users. The dominant restrictions remain in code execution speed and robustness, which the developers constantly strive to improve.

SOURCE CODE AVAILABLE (Y/N) - Y

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UNIQUE FEATURES - Contact slide surface Methods for automatic and Lagrange contact methods, Explicit integration, mass augmentation, rigid/deformable material switching and advance material constitutive behaviors.

RELATED SOFTWARE - INGRID, GRIZ, NIKE3D, TOPAZ3D, and DIGLIB

OTHER PROG/OPER SYS INFO - Fortran files use a .f extension, make files end in .mk, include files terminate with .h and all of the example problems are in the EXAMPLES subdirectory and begin with d3.

HARDWARE REQS - UNIX workstations and CRAY running Unicos. Memory requirement is problem-size dependent, however a minimum memory of 16 MB is recommended.

TIME REQUIREMENTS - Execution time is problem size and simulation duration dependent. Thus short problems take 1 minute while the long ones can take several weeks.

REFERENCES - B.E. Englemann and R.G. Whirley, DYNA3D, A Nonlinear Explicit, Three-Dimensional Finite Element Code for Solid and Structural Mechanics, User Manual, UCRL-MA-107254 Rev.1, November 1993.

ABSTRACT STATUS - Submitted Decenber 2000.

SUBJECT CLASS CODE - I

KEYWORDS -
COMPUTER PROGRAM DOCUMENTATION

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/DP

PACKAGE TYPE - AS - IS