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DYNA3D/PC

An Nonlinear Dynamic Analysis of Structure In Three-Dimension for PC

DYNA3D/PC is an explicit Three-dimensional finite element code for analyzing the large deformation dynamic response of inelastic solids and structures. A contact-impact algorithm permits gaps and sliding along material interfaces with friction. Using a specialization of this algorithm, such interfaces can be rigidly tied to admit variable zoning without the need of transition regions. Spatial discretization is achieved by the use of 8-node solid elements, 2-node beam elements, 4-node shell elements, 8-node solid shell elements, and rigid bodies. The equations-of-motion are integrated in time by the central difference method.

The **DYNA3D/PC** contains thirty materials models and ten equations of state to cover a wide range of materials behavior. The code was developed in 1976 at Lawrence Livermore Lab. and was successfully applied to a moderate number of problems. This early version had a lot of non-friendly user interfaces. In an attempt to alleviate these drawbacks, a new version of DYNA3D was re;eased in 1979 that had been reprogrammed to provide near optimal speed on the computer, contained an improved sliding interfaces treatment that permitted triangular segments, and was an order of magnitude faster than the previous treatment. The 1981 version of DYNA3D evolved from the 1979 version. Body force loads and nine additional materials models were added for modeling a much broader range of problems, including explosive-structure and soil-structure interactions. A link was established from the 3D Eulerian code JOY to DYNA3D for studying the structural response of impacts by penetrating projectiles. JOY computes the penetration problems and specifies the motion of a common interface. A sliding-only interface option, based on the same option in DYNA2D was also added. In this version of DYNA3D many new features were added, including:

- BEAMS
- Shells
- Rigid Bodies
- Single Surface Contact
- Interface Friction
- Discrete Springs and Dampers
- Optional Hourglass Treatments
- Optional Exact Volume Integration
- Cost Effective Resultant Beam Element
- Truss Element
- CO Triangular Shell
- BCIZ Triangular Shell
- Mixing of Element Formulations in Calculations
- Composite Failure Modeling for Solids
- Non-interactive Plans Stress Plasticity
- Spot Welds
- Tiebreak Sliding Surfaces
- Beam Surfaces Contact
- Finite Stonewalls
- Stonewall Reaction Forces
- Energy Calculations for all Elements

- Crushable Foam Constitutive Model
- Comment Cards in the Input
- One - Dimensional Slidelines

The soil and crushable foam, the linear visoelastic, and the Blatz-Ko rubber subroutines were adapted and recorded for vectorization; the ignition and growth EOS was also adapted. The 1989 version of the code introduces many enhanced capabilities also for more information please call us.

We at **Galaxy Advanced Engineering, Inc. (GAE)** have taken steps to make this code available on your PC platform under PC/DOS or PC/Windows96/98 and NT operating system. To obtain the code and more information, please contact our company or call us at (650) 525-1314