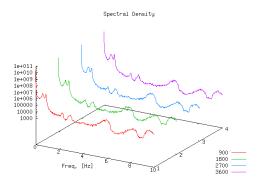
## **Test Data Analysis**

Spectral density Shock response spectra (SRS) Visualization plots



### **Shock And Vibration Requirements**

Shock response spectra definition Random environments definition

## **Machinery Diagnostics**

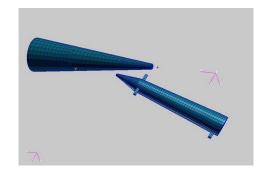
Machinery malfunction identification Asset condition monitoring

## **Software Development**

Scientific Algorithms Finite element code Shell Script Automation Signal Processing

## **Shock/Impact Analysis**

Missile Lethality
Shock Reduction/Isolation
Shock response spectra prediction
Crashworthiness/human survivability



# **Failure Analysis**

Fracture control
Fatigue crack propagation
Metallurgical assessment
Product weak point identification
Design change recommendations

## **Surface Engineering**

Rolling Element Modeling Surface Coatings Evaluation Effect of Surface Defects Evaluation

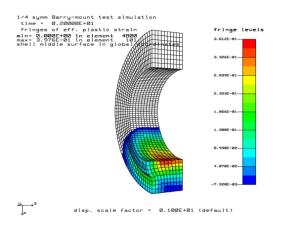
## **Finite Element Analysis**

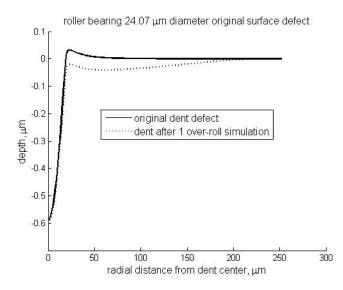
Model development and verification Static, dynamic, and frequency Transient, frequency response, random Combined thermal and mechanical

### **Nonlinear Analysis**

Large deformation geometry Material modeling

- Elastic-plastic
- Material failure
- Fiber composites damage
- Soil and crushable foam





### **MISSION**

To provide solutions to complex problems that exceed customer expectations. This is accomplished by continued expansion and improvement of technical capabilities and open customer communication.

#### **OPERATING PRINCIPLES**

Nonlinear Solutions strives to operate in a way that honors the Savior, Jesus Christ by following His example in the way we treat customers, business partners and employees:

- Respect and courtesy
- Honesty and integrity
- Quality of services provided
- Committed to customer satisfaction
- Clearly defined work statements
- Frequent communication
- No surprises

Call or email your job description for a price quote

Nonlinear Solutions uses the following Lawrence Livermore finite element codes:

- **DYNA2D**: Nonlinear 2D explicit dynamics
- **DYNA3D**: Nonlinear 3D explicit dynamics
- **NIKE2D**: Nonlinear 2D Implicit dynamics and statics
- **NIKE3D**: Nonlinear 3D Implicit dynamics and statics
- TOPAZ2D: 2D Heat Transfer
- **TOPAZ3D**: 3D Heat Transfer
- **MAZE**: 2D Mesh Generator
- **INGRID**: 3D Mesh Generator
- **GRIZ**: Results Visualization

Collaborator with codes since 1993.

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www.nonlinear-solution.com



### **SOLUTIONS**

**FOR** 

### **COMPLEX**

### **PROBLEMS**

Nonlinear Solutions is a small, woman owned, disadvantaged business providing:

**Structural Analysis** 

**Test Data Analysis** 

**Fatigue/Fracture Analysis** 

**Failure Analysis** 

**Analysis Software Development** 

**Independent Assessment** 

