System Dynamic Analysis - II

Introduction to Modal Analysis

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Refs: Ewins, McConnell, Notes by Allemang and Brown, SDRC and HP Users Guides

Introduction

- Background of Modal Analysis
- Degrees of Freedom
- Basic Assumptions of Linear Modal Analysis

Single Degree of Freedom Systems

- Theory
- Domain Classification
- Analytical Models (Scalar Polynomial, Partial Residue)
- Frequency Response Function (FRF) Representation
- Impulse Response Function (IRF) Representation

Multiple Degree of Freedom Systems

- Theory
- Solution of Eigenvalue Problem
- Modal Coordinates

Applications of General Input-Output Systems

- Frequency Response Function (FRF) Development
- General Damped (Proportional and Non-proportional) Systems
- Simulation of Structural Response

Review of Analytical Modeling

- FE Modeling
- Numerical Modeling
- Correlation and Comparison of Modeling Methods

Advanced Modal Analysis Concepts

- Modal Scaling
- Measurement Degrees of Freedom
- Mathematical Models
- Repeated Modal Frequencies

MEM 800 - Section 566/567/568

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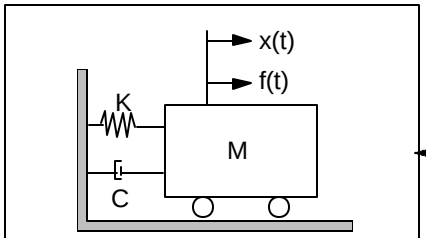
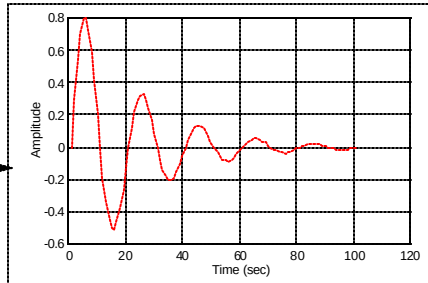
- Structural Dynamics/Vibrations Theory
- Single and Multi Degree of Freedom Systems
- Analytical/Experimental Relationships
- Data Acquisition, Digital Signal Processing Concepts
- Measurement, Structural Testing and Transducer Concepts
- Modal Parameter Estimation Techniques
- Modal Data Presentation/Validation Techniques
- Modeling Techniques, Model and Test Correlation, Model Updating



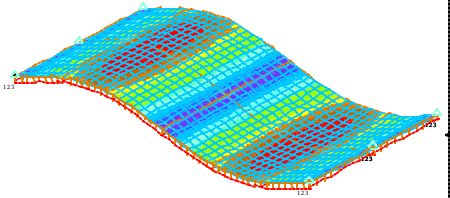
Theory of Structural Dynamics



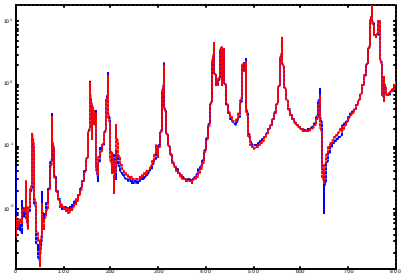
Analysis of Dynamic Systems

Analysis and Testing of a Physical Model

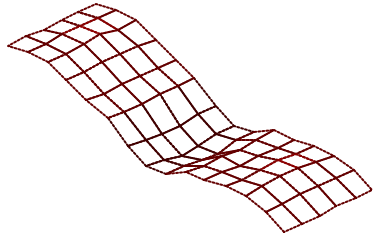
Data Acquisition



Analytical Modeling



Data Analysis and Processing



Experimental Modal Analysis