



Introduction to Rail System Dynamics

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Module 1: Introduction and Basics

- Introduction
- Axis and Coordinate Systems
- Dynamic Terminology
- Wheel, Rail, and Track Basics

Module 2: Wheel-Rail Contact Mechanics & Dynamic

- Introduction to Wheel-Rail Dynamics
- Hertzian Contact Theory
- Rolling Friction
- Contact Patch
- Track Model

Module 3: Wheelset Kinematics and Dynamics

- Dynamics of an unconstrained wheelset
- dynamics on tangent track
- Hunting Dynamics
- Curving dynamics
- Curving Forces
- Curving Energy

Module 4: Case Study

- Effect of Wheel/Rail forces on Wheel
Climb Derailment

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