ME 7120: Project 3

Application of Newark Beta Methods

to a 2D frame problem

ME-7120 Finite Element Method Applications

Due: December 9, 2016

Team Members:

Jay Vora

Sagar Sangle

Mayank Patel

Guided by

Dr. Joseph Slater

**Table of contents:**

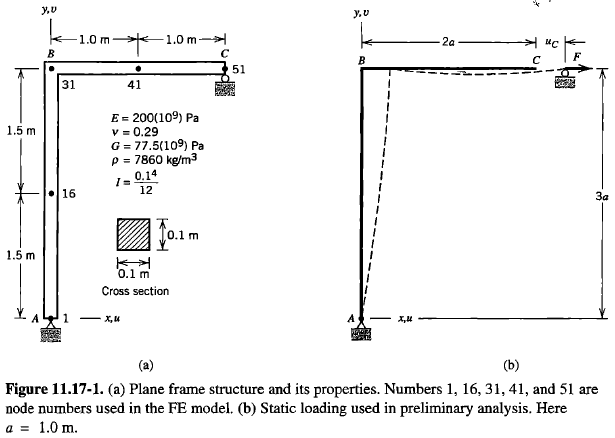
1. **Project Introduction**
2. **Problem Description**
3. **Methodology**
4. **Newmark beta methods**
5. **Method’s comparison**
6. **Conclusion**

# Project Introduction

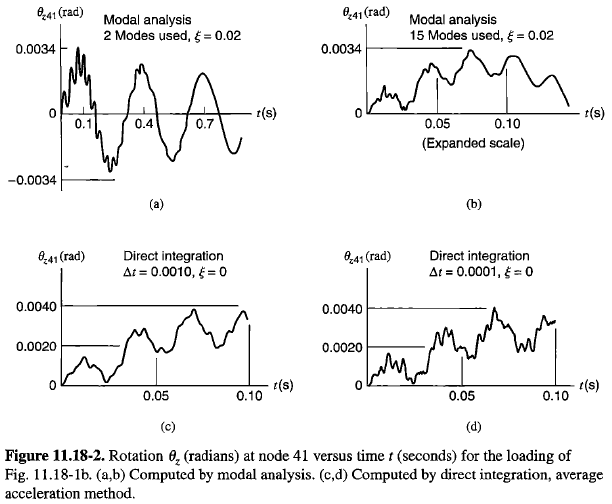
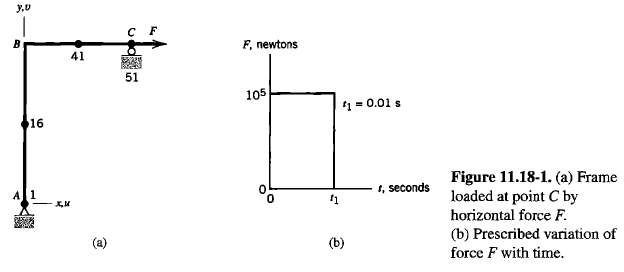
This project allowed us to learn what is the Newmark beta method of integration for achieving dynamic response of the frame structure problem elaborated below. We proceeded with the Beam2 example from WFEM and modified it for our problem structure. Five Newmark beta methods were applied to same structural problem and were compared to understand how future displacement, velocities and acceleration varies with respect to time.

1. **Problem Description**

A frame structure is shown below is constrained at node 1 in X and Y directions. Also node 51 is constrained in Y direction. The properties that are taken in consideration are



Loading conditions



5 newmark methods

