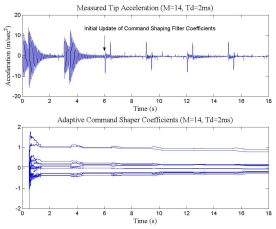
# Flexible Robots
## Chairs: Andrew Goldenberg, Gregory P. Starr

**Adaptation of Generalized Time-Delay Command Shaper for Flexible Manipulator Control**
S. Rhim and W. J. Book
Georgia Institute of Technology

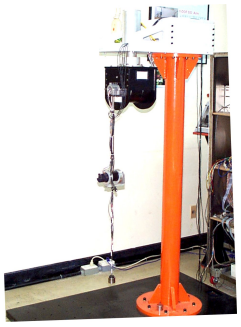
- Time-delay Command Shaping with Uncertain System Parameters
- Direct Adaptive Command Shaping using Generalized Time-delay Command Shaper
- Experimental Results are Shown
- Direct Adaptive Command Shaping Effectively Suppresses Vibration of Flexible Machines with Uncertain System Parameters




**Stability of A Flexible Link with an Arbitrarily Oriented Tip Rotor and a Conservative Tip Load**
L. Li, G. R. Heppler and K. Huseyin
University of Waterloo

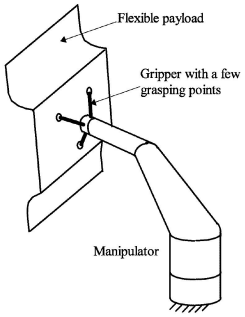
**Bandwidth Modulation of Rigid Subsystem for the Class of Flexible Robots**
J. Cheong, W. K. Chung and Y. Youm
Pohang University of Science & Technology (POSTECH)

- Reshaping the Bandwidth of Rigid Sub-system
- Passivity-based SPR filter and DOB-based Q filter Design
- Joint Tracking Experiments for Various Bandwidth Parameters
- Rigid Bandwidth Must Be Far Below the Fundamental Mode



**Vibration Controllability of Flexible Robot-Payload Systems**
T. Zhou, J. W. Zu and A. A. Goldenberg
University of Toronto

- Problem: payload vibration due to its flexibility
- Can the interested vibration modes be controllable?
- Dynamic modeling and local controllability theory
- Locations of grasping points play an important role




**PDS Cooperative Control of Two One-Link Flexible Arms**
F. Matsuno and A. Hayashi
Tokyo Institute of Technology

**Robust Control Design for Flexible-Link/Flexible-Joint Robots**
D. G. Wilson[1], G. P. Starr[1], G. G. Parker[2] and R. D. Robinett[3]
[1]The University of New Mexico, [2]Michigan Technological Univsersity and [3]Sandia National Labratories