PROJECT II GROUP 2 MEETING 3

12 July 2019

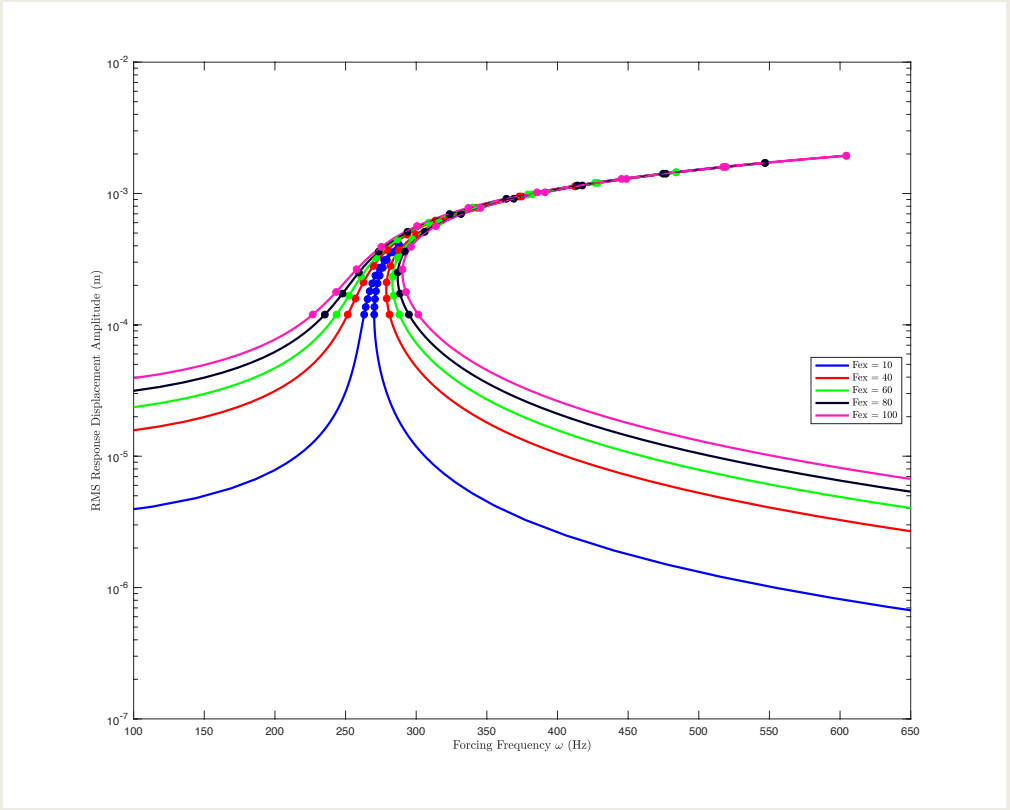
Topics:

- Consistency of NMs and Frequency Response
- Effect of imperfect excitation on NMs

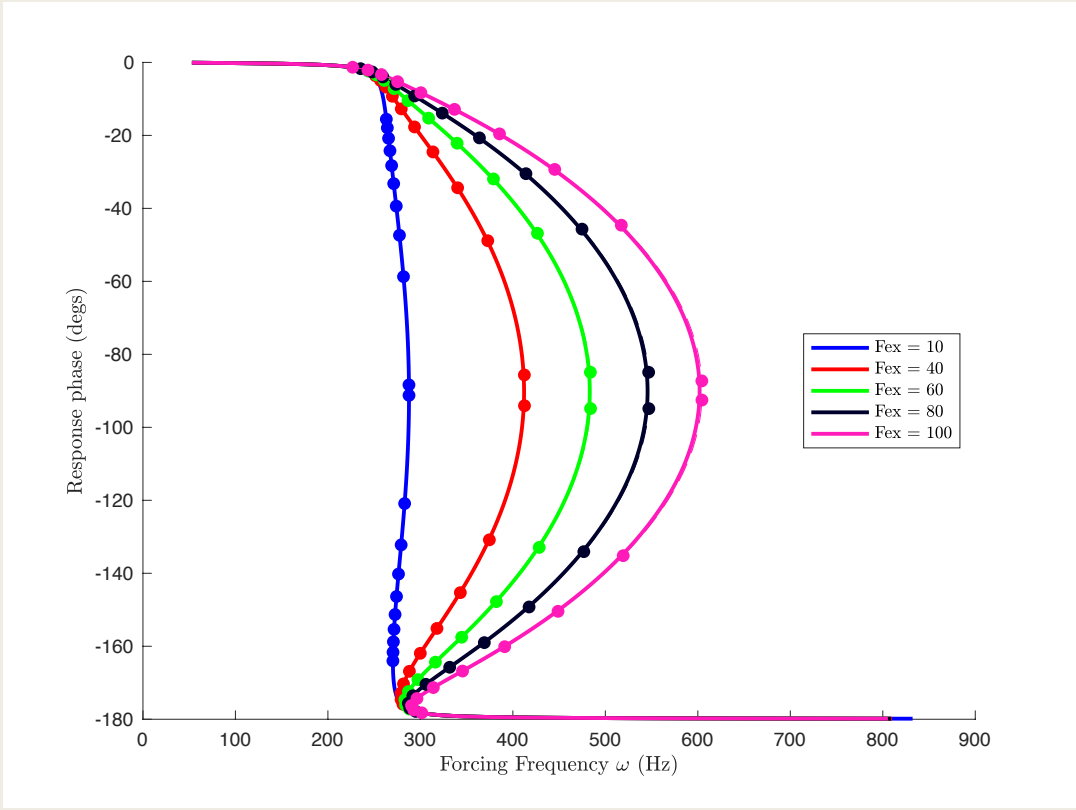
I. Consistency of NMs and Frequency Response

- Compare synthesized frequency response with the direct computations
- Compare synthesized phase response with the direct computations

Benchmark Model I: Flat clamped-clamped beam model (Duffing Oscillator)

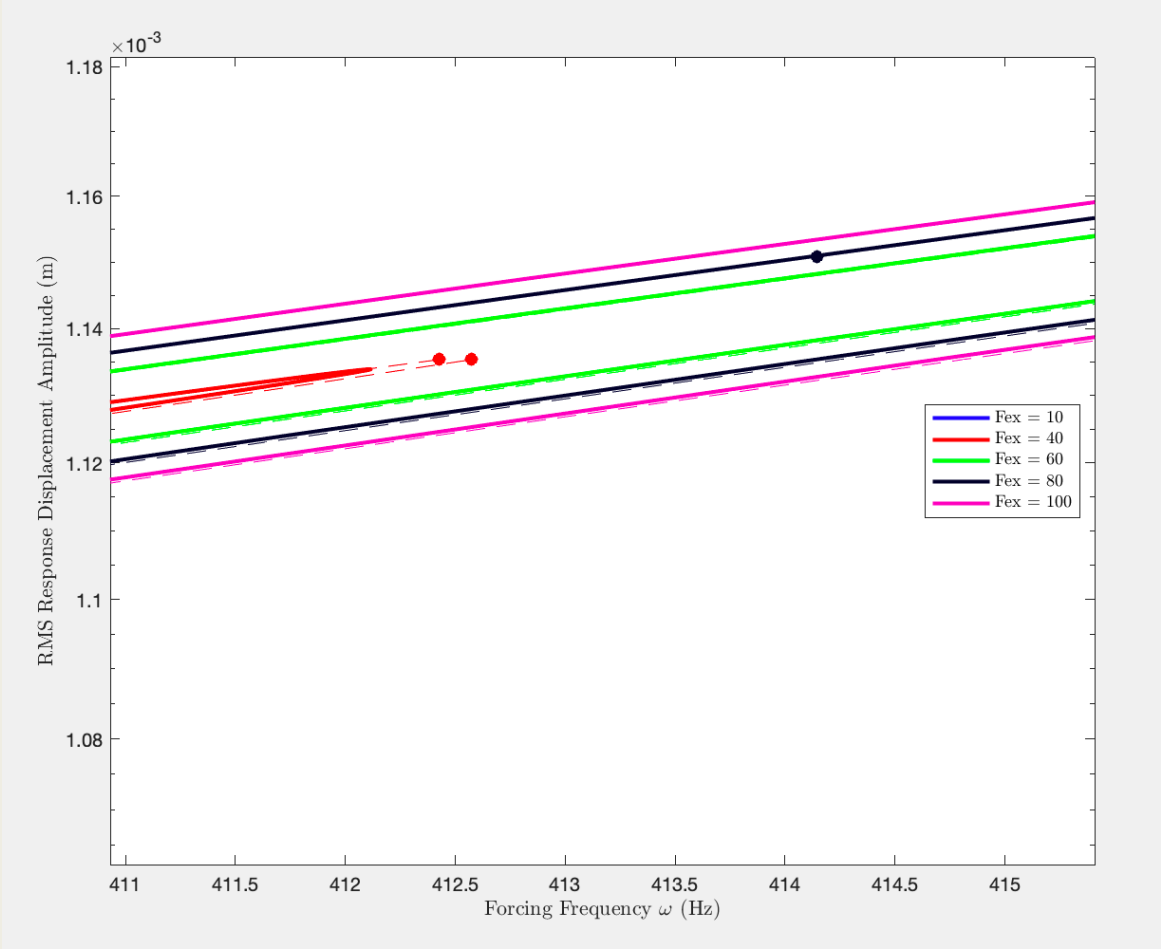


FRF

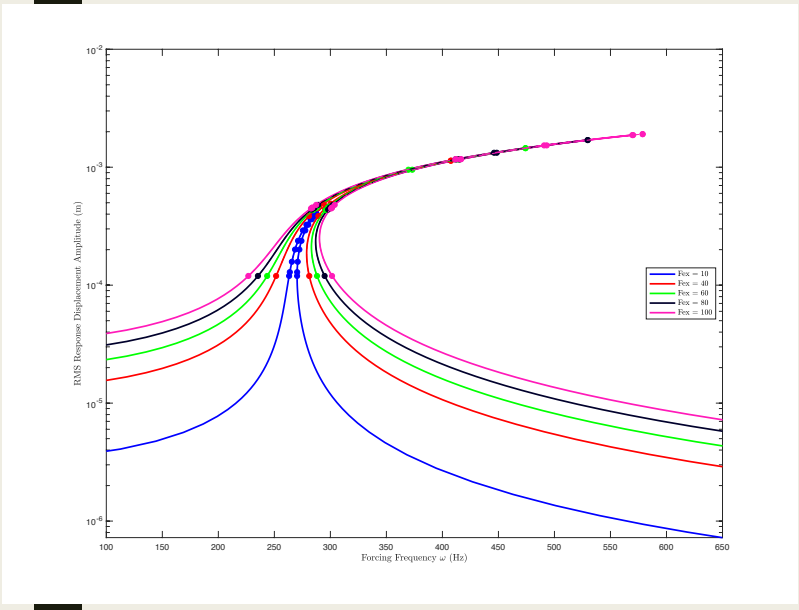


Phase

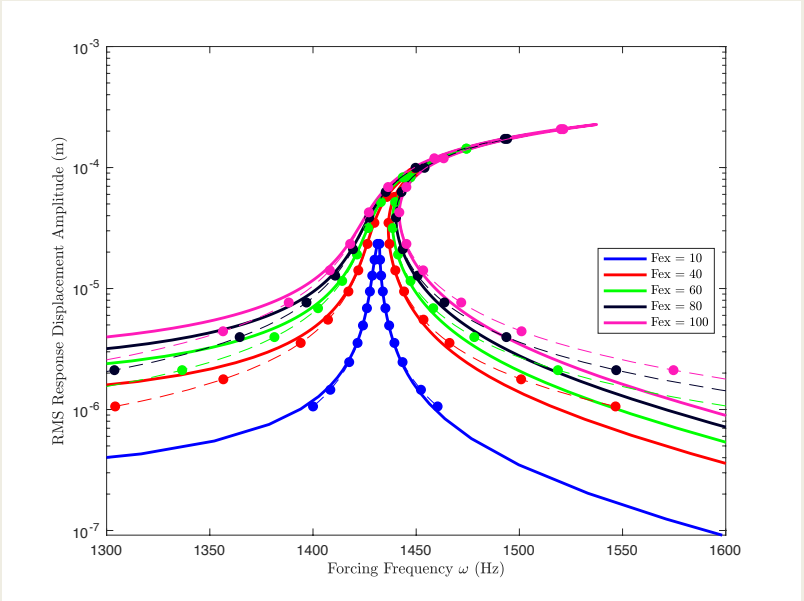
Benchmark Model I: Flat clamped-clamped beam model (Duffing Oscillator)



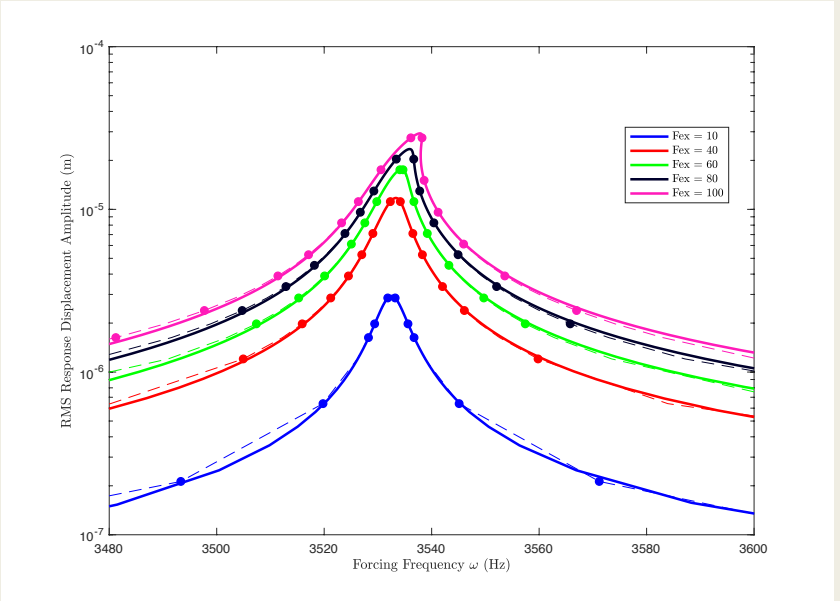
Benchmark Model II: Flat clamped-clamped beam model (Nm = 5)



Mode I

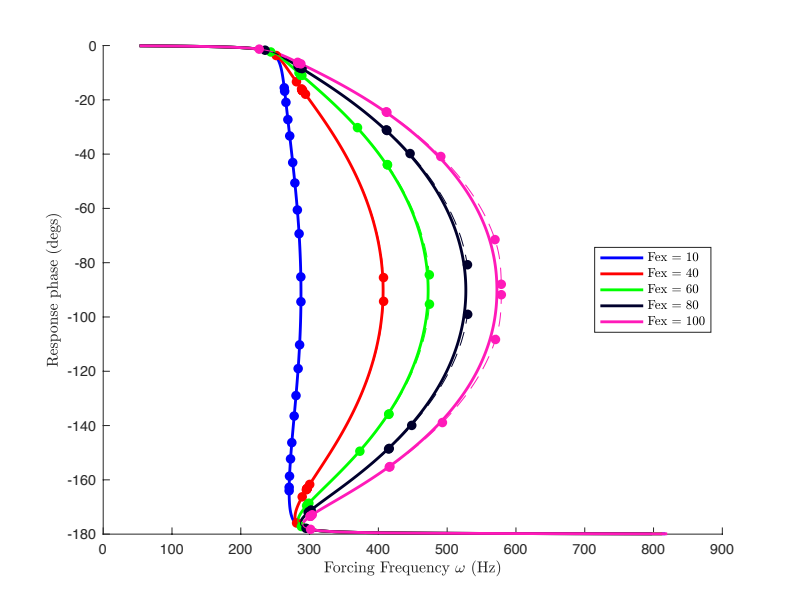


Mode III

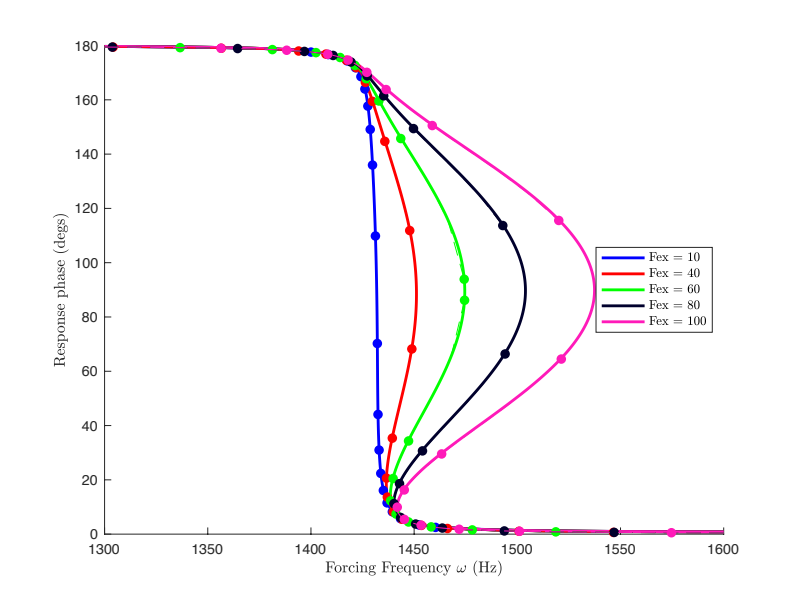


Mode V

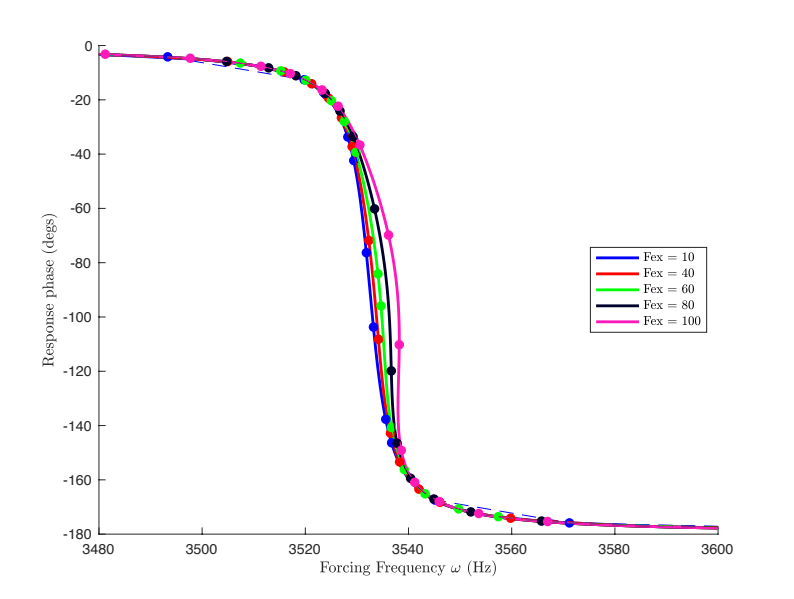
Benchmark Model II: Flat clamped-clamped beam model (Nm = 5)



Mode I



Mode III

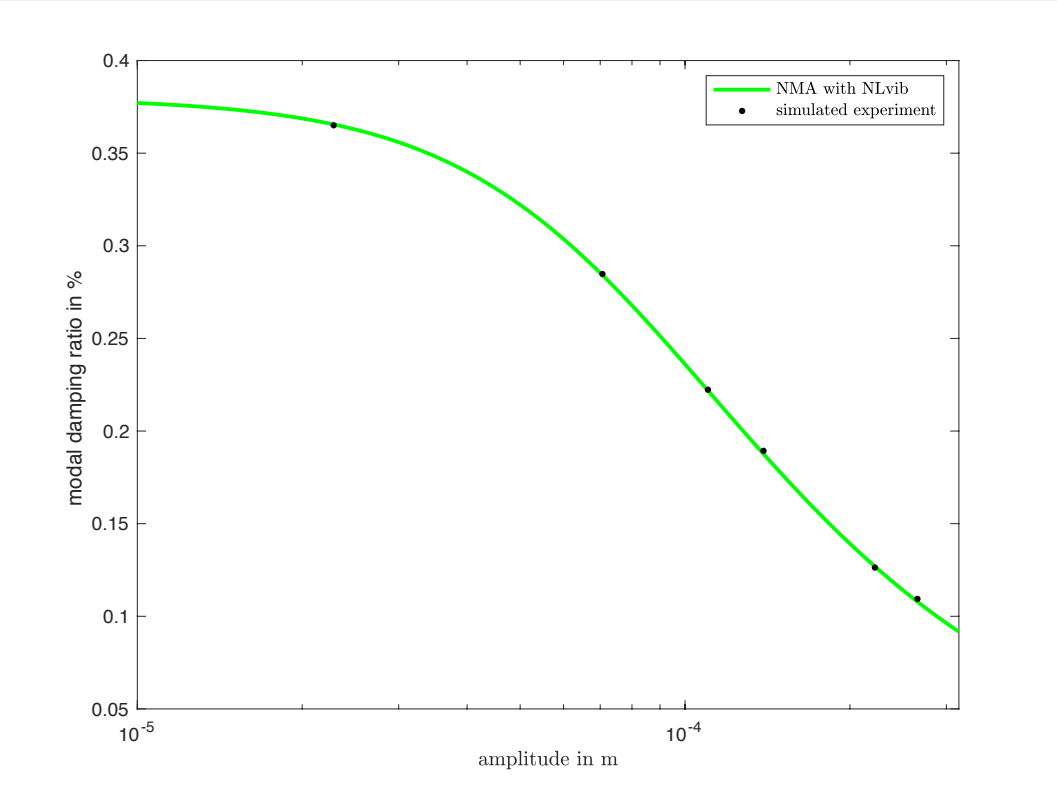


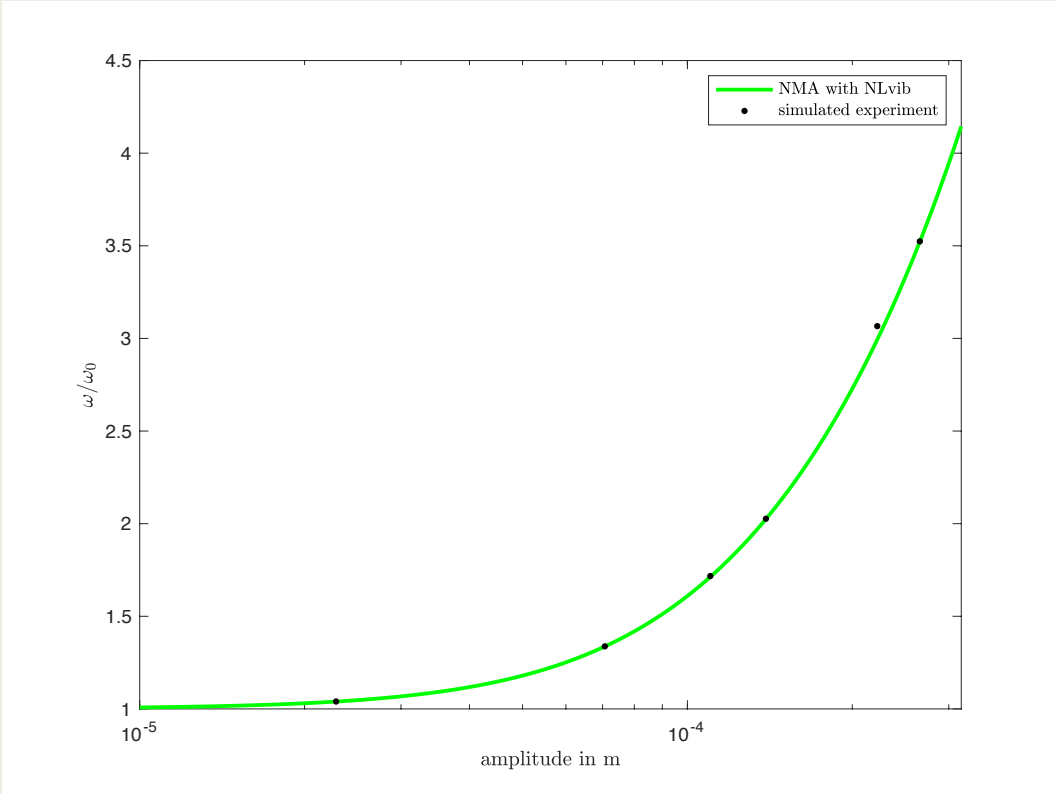
Mode V

II. Effect of imperfect excitation on NMs

- Simulate Phase Resonance Tests with pure harmonic excitation
- Add shaker + stinger into Simulink model
- Compare identified NM with reference

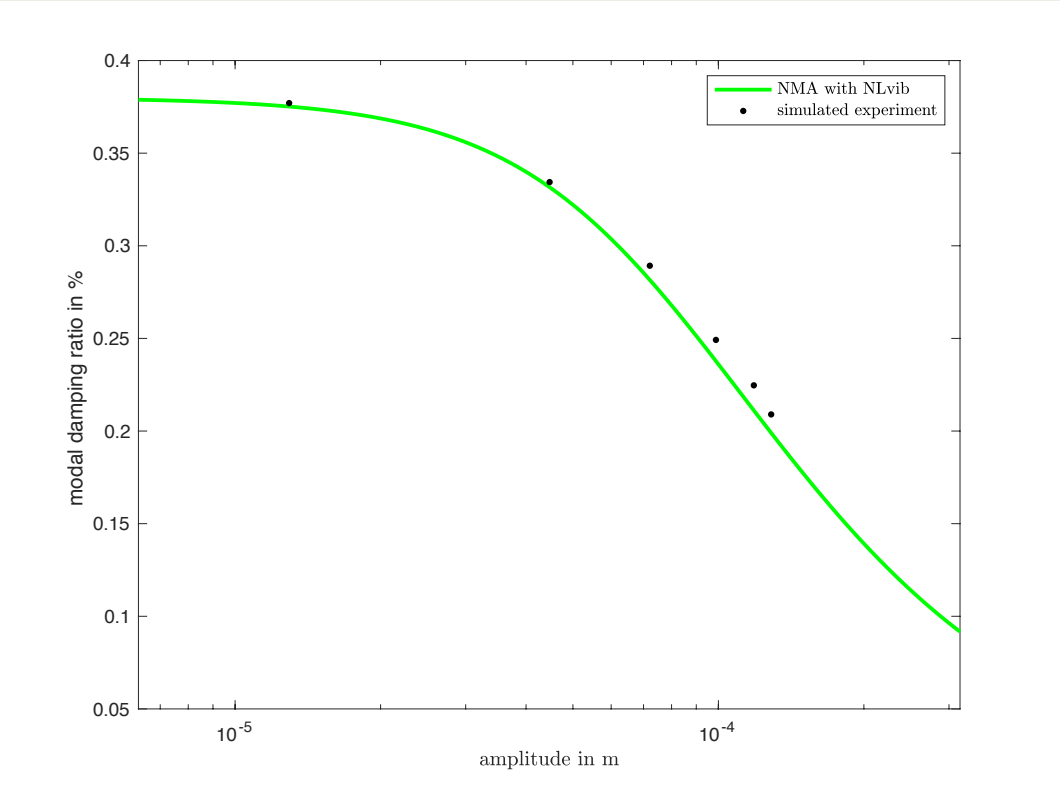
Benchmark Model I: Flat clamped-clamped beam model (Duffing Oscillator)

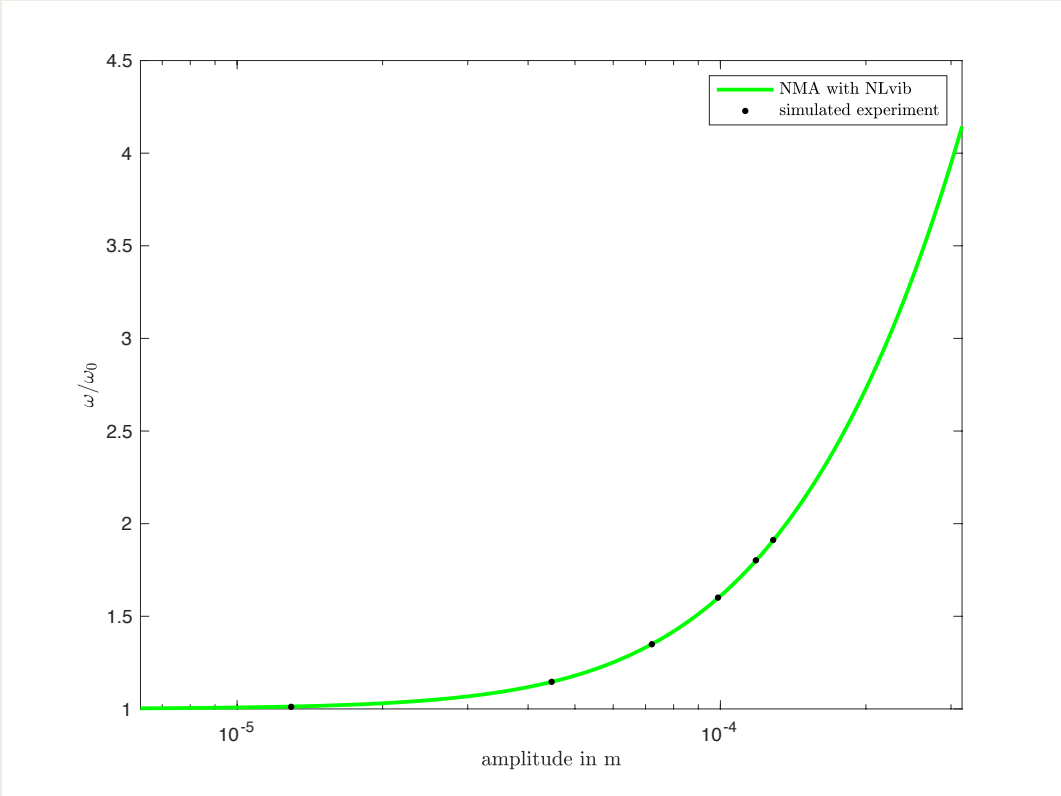




Without shaker + stinger
P = 0
I = 50
D = 0

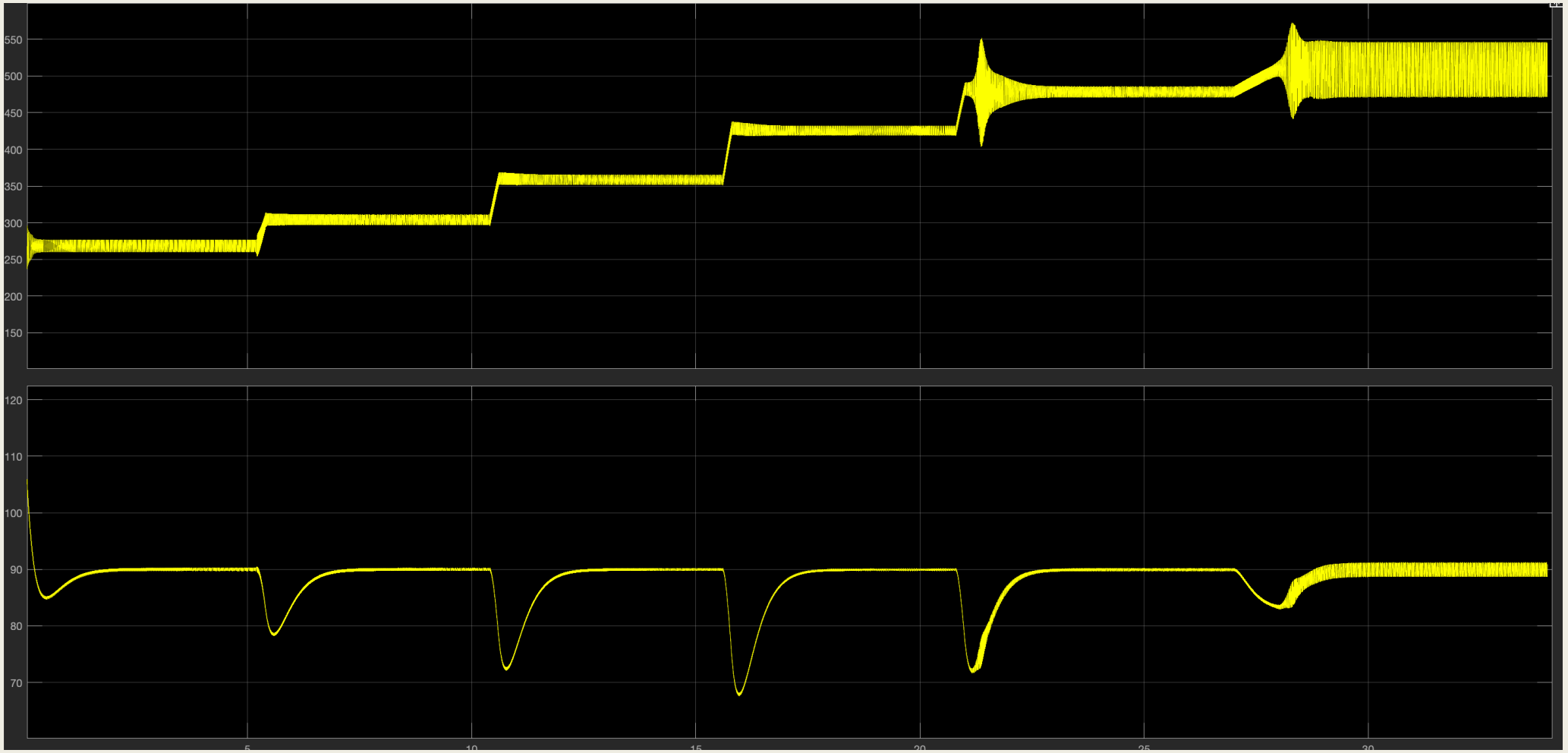
Benchmark Model I: Flat clamped-clamped beam model (Duffing Oscillator)



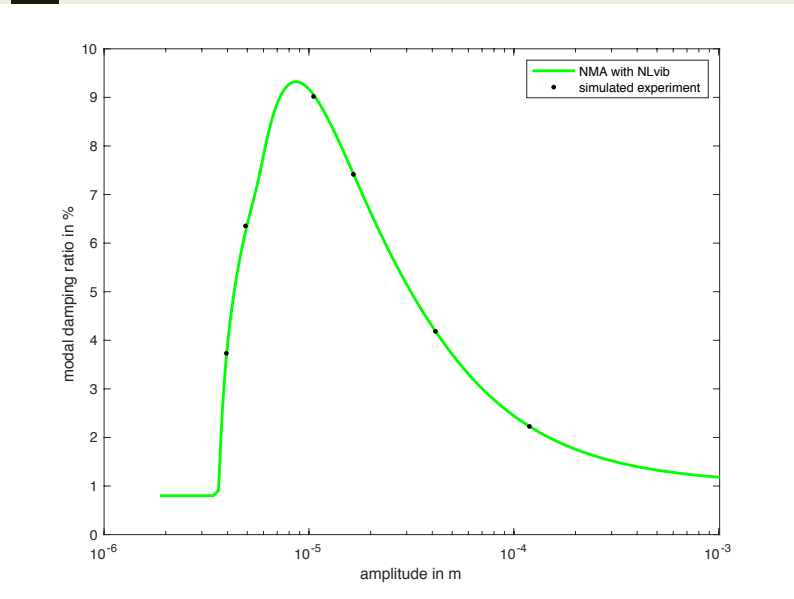


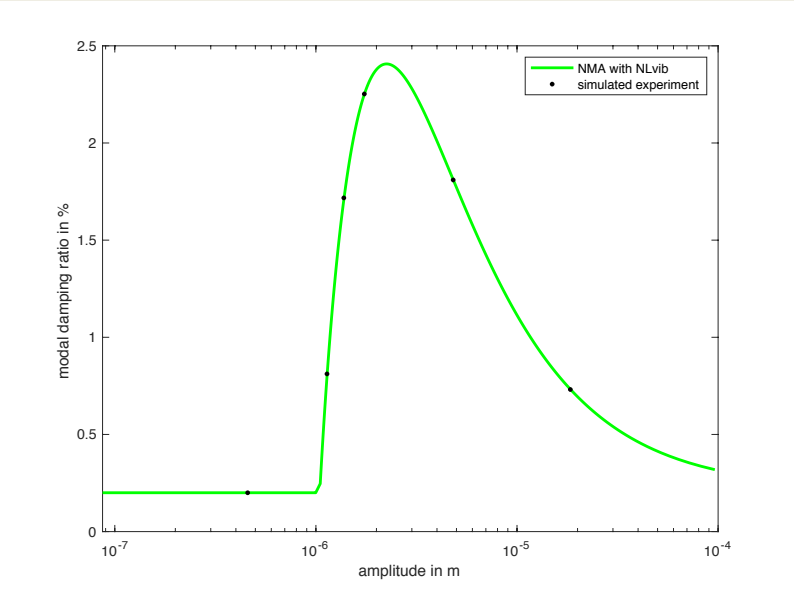
With shaker + stinger
P = 800
I = 1500
D = 100

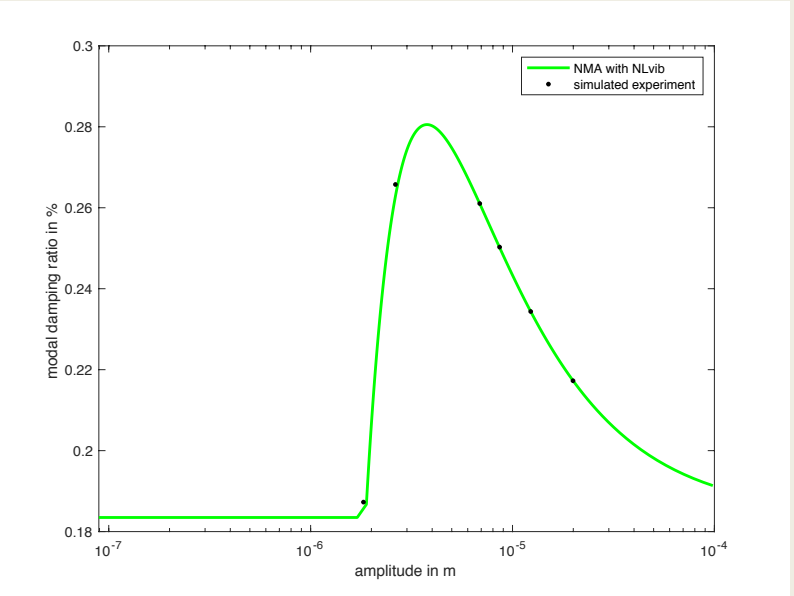
Benchmark Model I: Flat clamped-clamped beam model (Duffing Oscillator)



Benchmark Model IV: Cantilever beam with elastic dry friction element

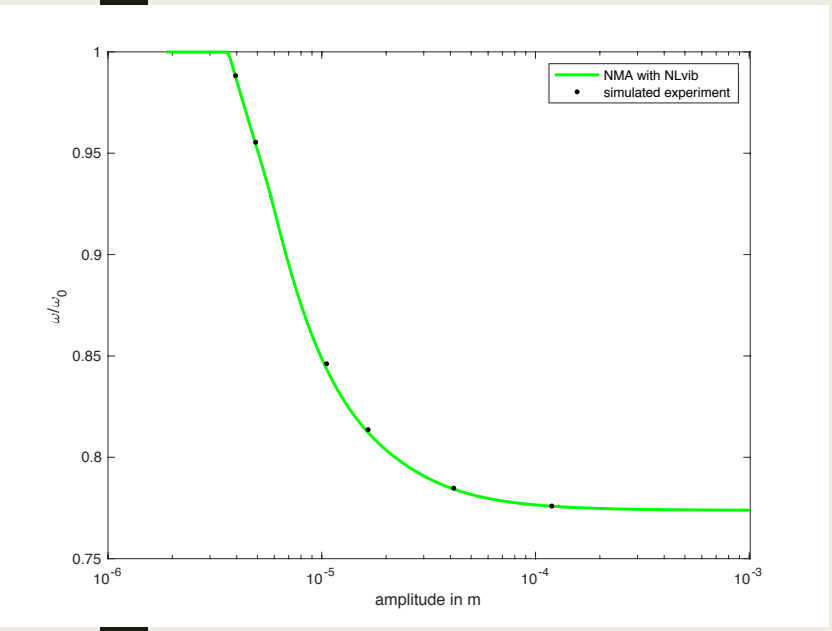


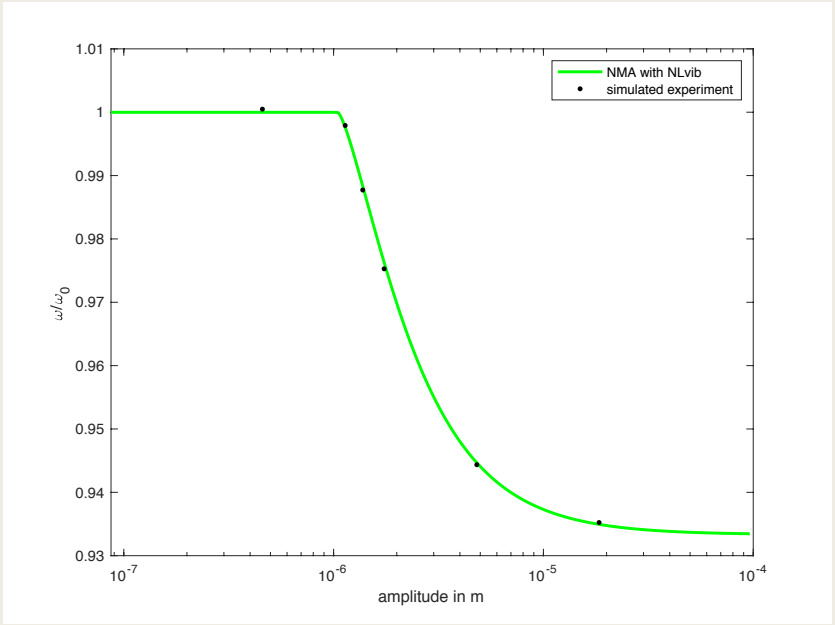


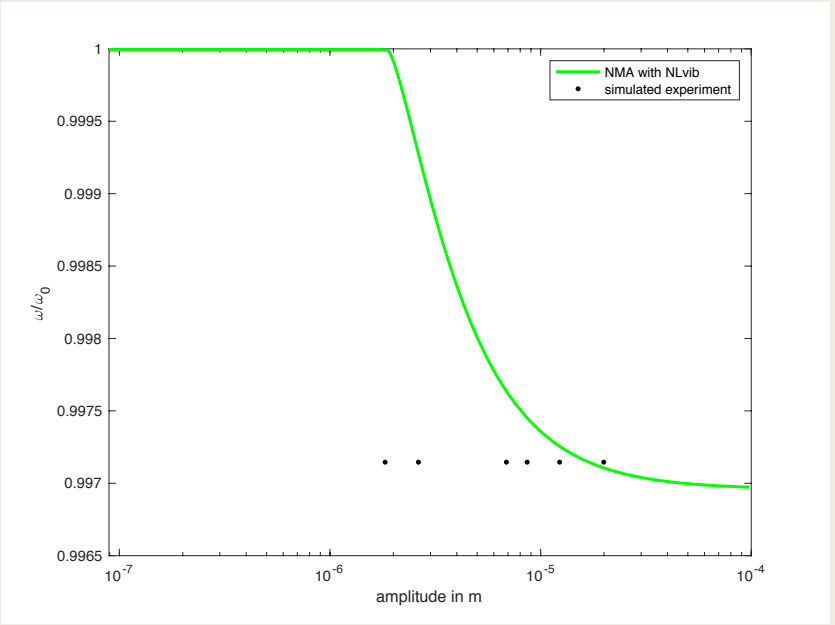


Without shaker + stinger
P = 5
I = 50
D = 0

Benchmark Model IV: Cantilever beam with elastic dry friction element

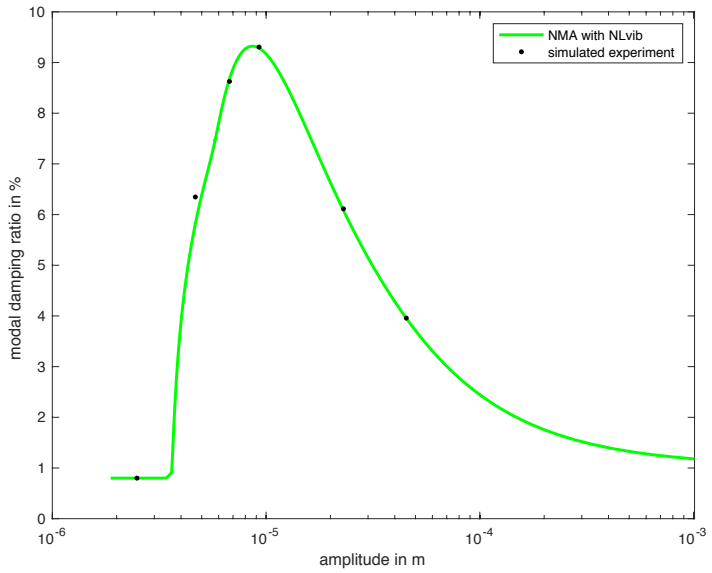


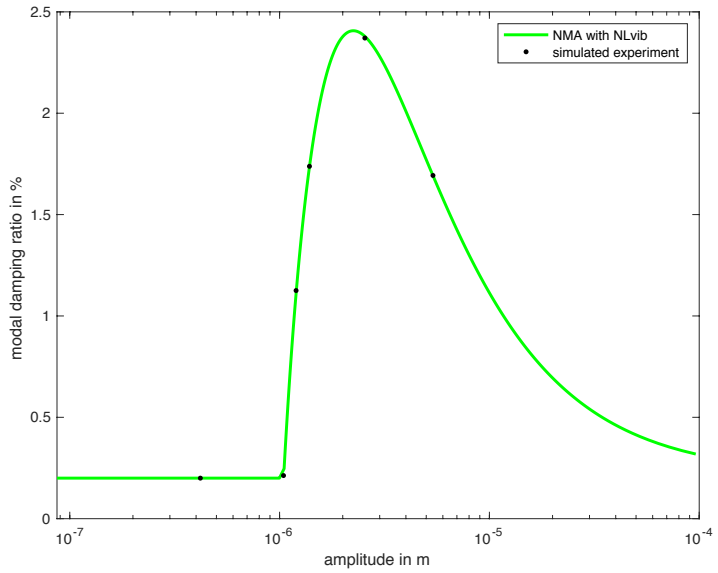


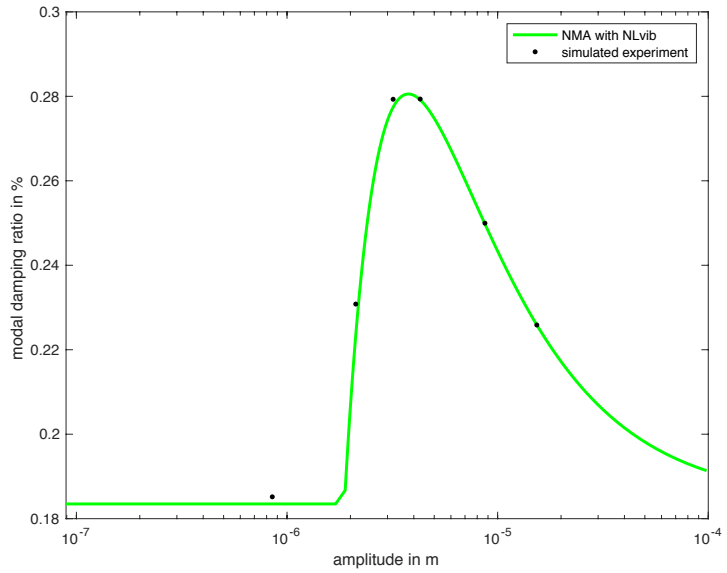


Without shaker + stinger
P = 5
I = 50
D = 0

Benchmark Model IV: Cantilever beam with elastic dry friction element

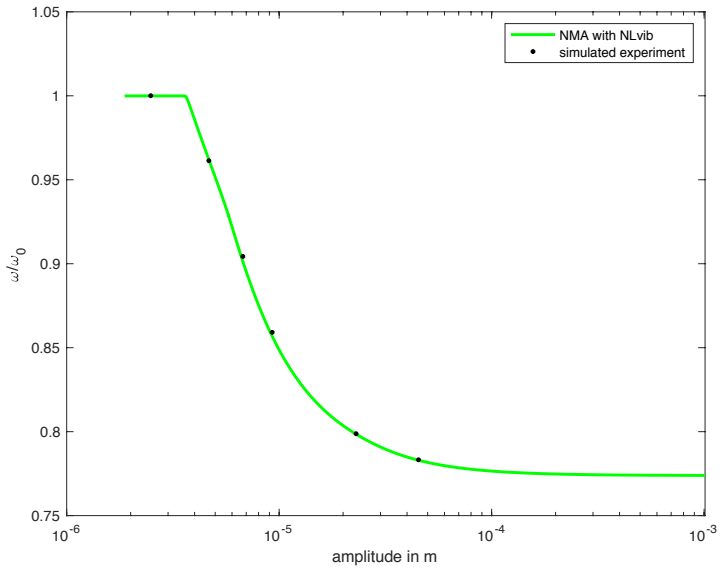


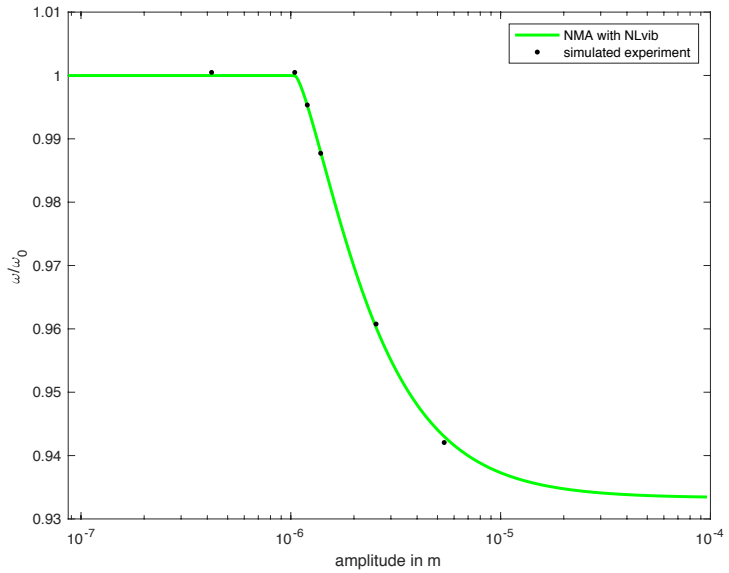


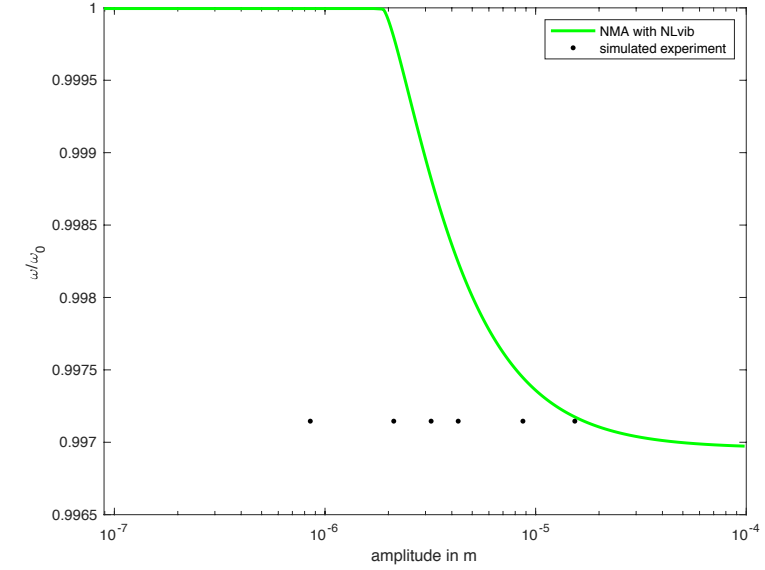


With shaker + stinger
P = 5
I = 50
D = 0

Benchmark Model IV: Cantilever beam with elastic dry friction element







With shaker + stinger
P = 5
I = 50
D = 0