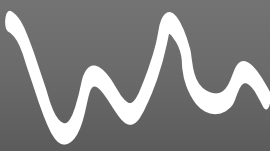


DESIGN AND REMEDIAL MEASURES



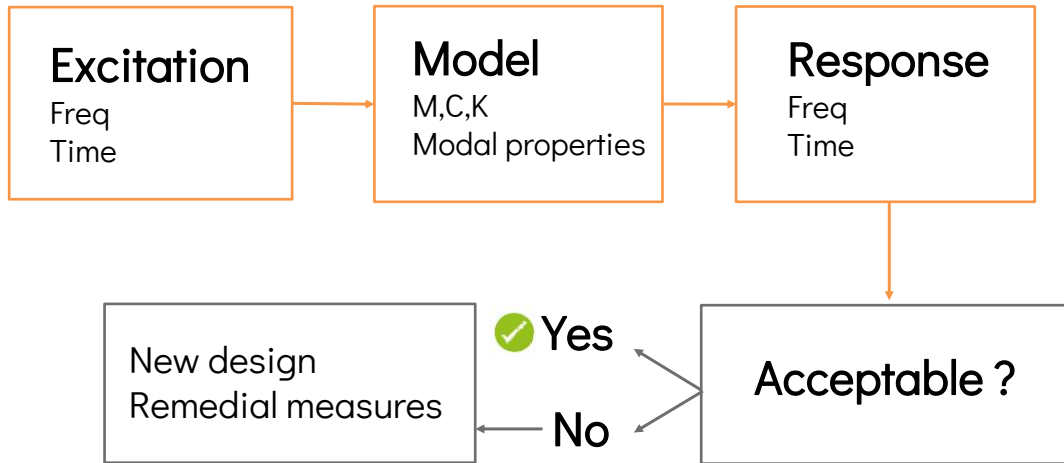
1

PROBLEM STATEMENT



2

Design methodology



3

3

Narrow vs broad band excitation

Narrow band

Single resonance

- Earthquakes
- Machines
- Pedestrians
- Vortex Induced Vibrations
- Galloping
- Flutter

- High/low tuning
- Damping (tuned absorber)
- Isolation
- Reshaping

Broad band

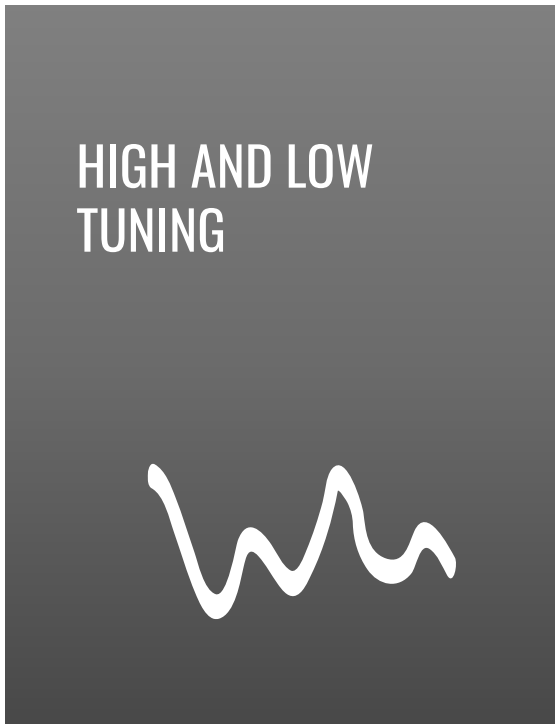
Multiple resonances

- Turbulent wind
- Shocks
- Traffic

- High tuning
- Damping (material)
- Isolation
- Reshaping

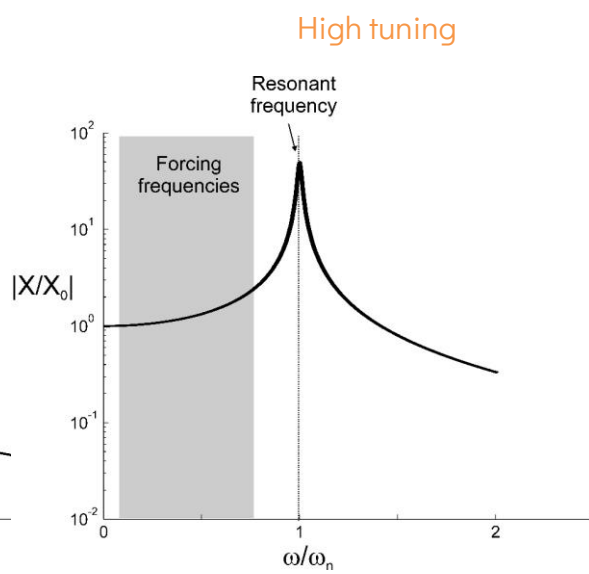
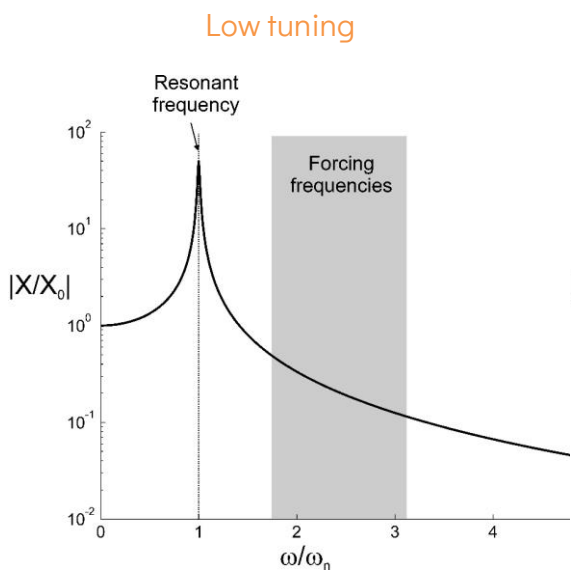
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High tuning vs low tuning

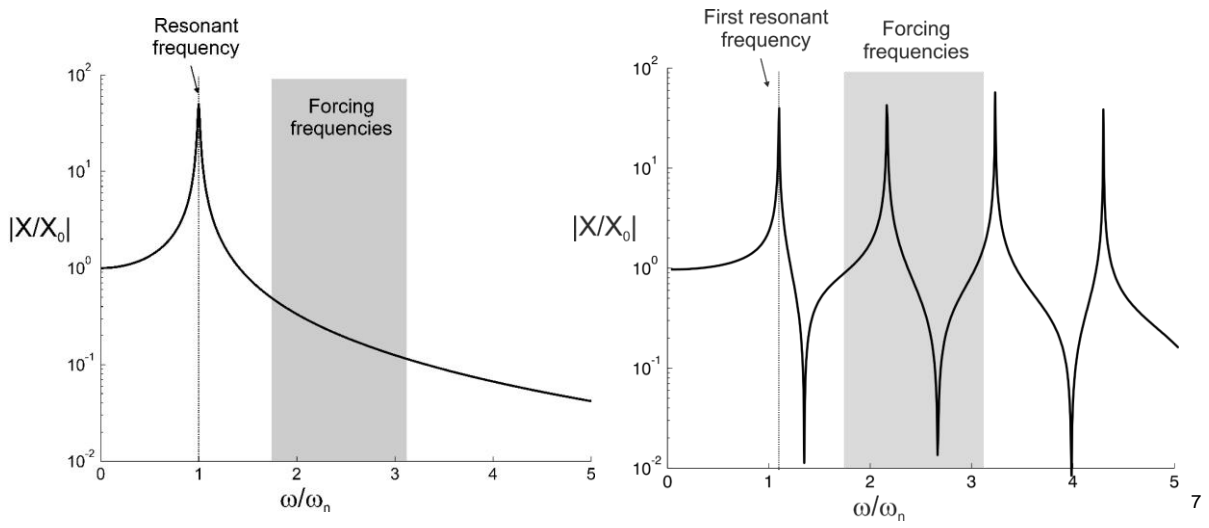


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6

Low tuning in MDOF systems

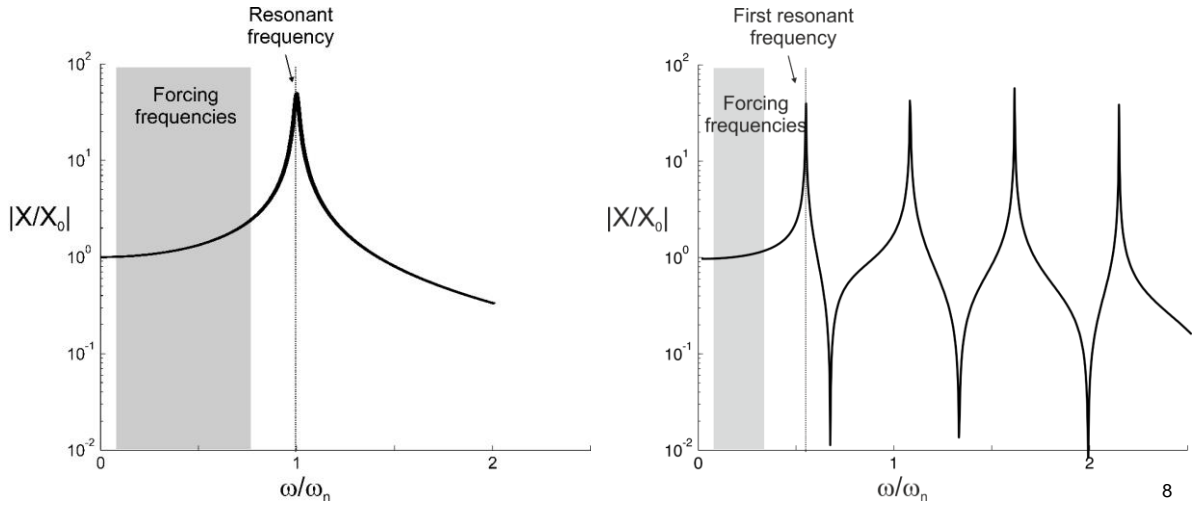
Low tuning



7

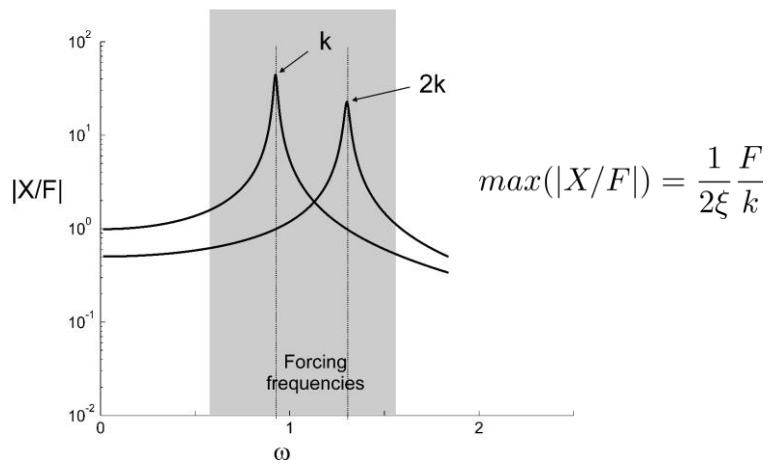
High tuning in MDOF systems

High tuning



8

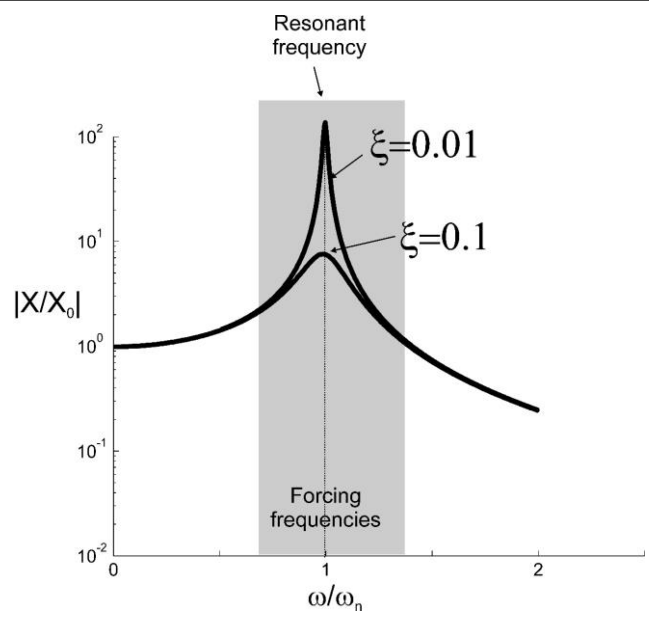
Stiffening



→ Stiffening leads to lower vibration for the same value of damping



Adding damping



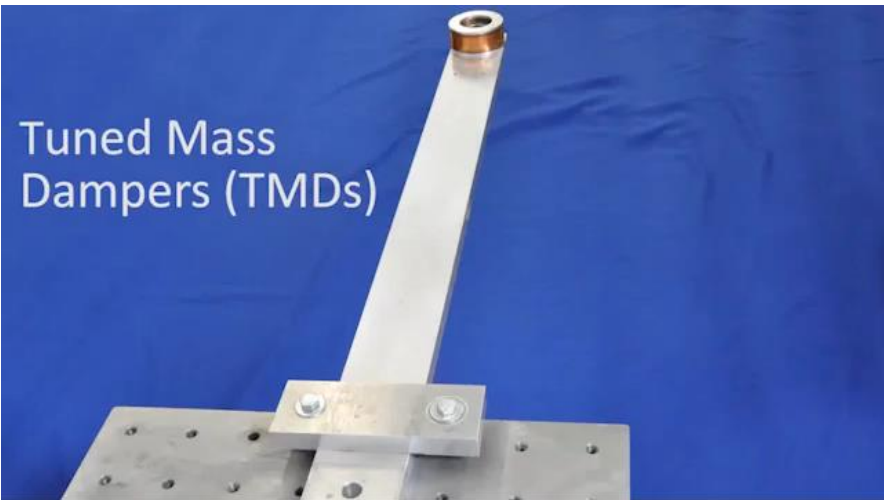
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Beam equipped with a TMD



<https://youtu.be/HDa1VO1VDpc>

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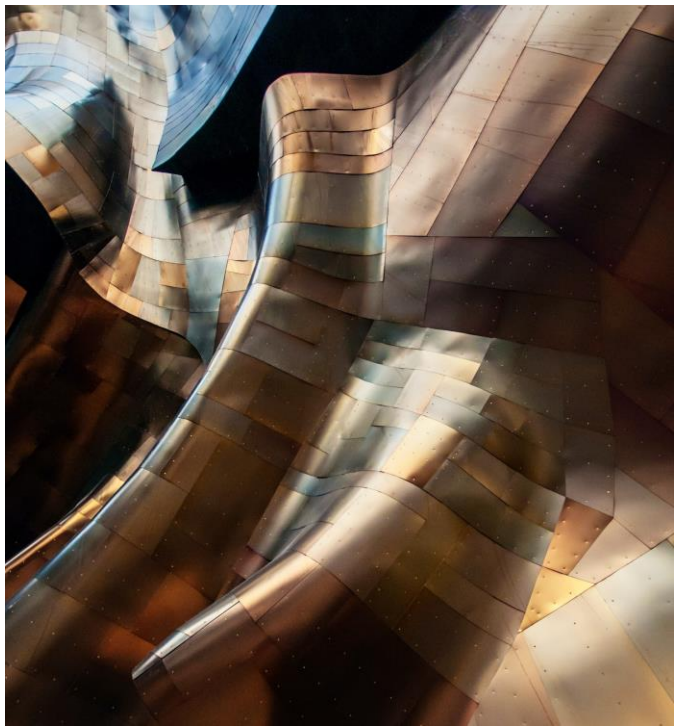
Vibration isolation of a wine glass



<https://www.youtube.com/watch?v=gt4SrJayJ88>

15

15



16

Buildings in wind



<https://www.youtube.com/watch?v=tHMPR7fIpf4>

17

17