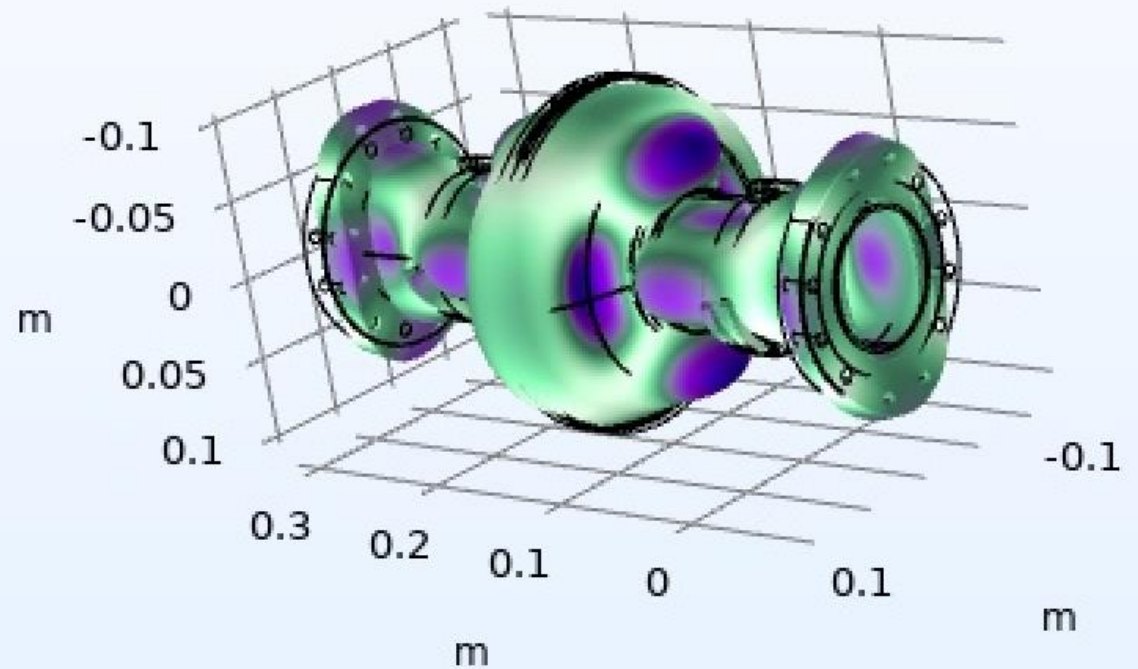


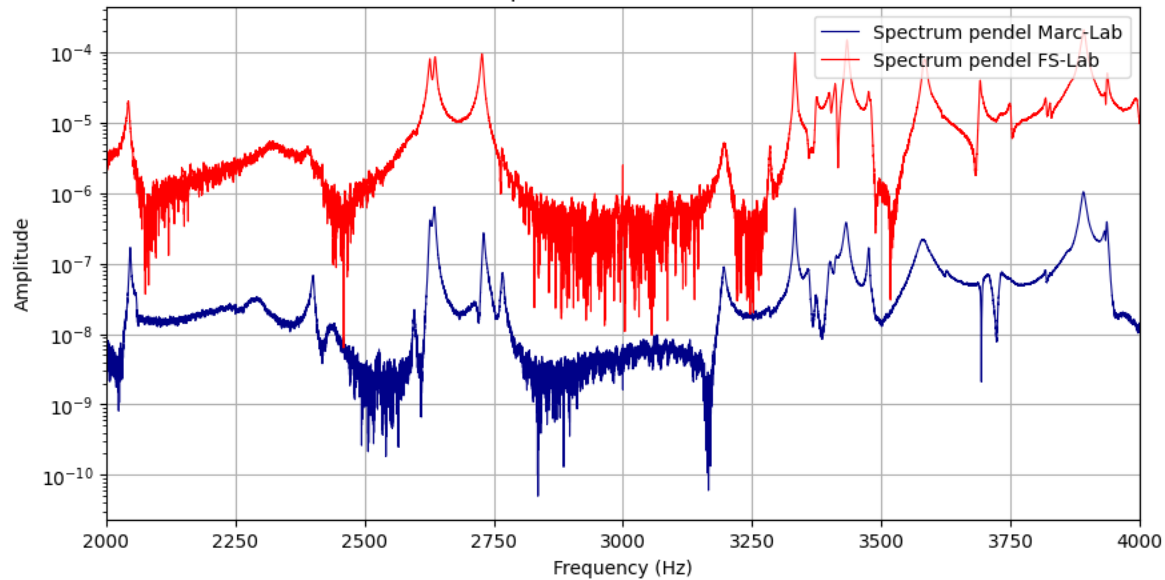
Mechanical Resonances

Status Report

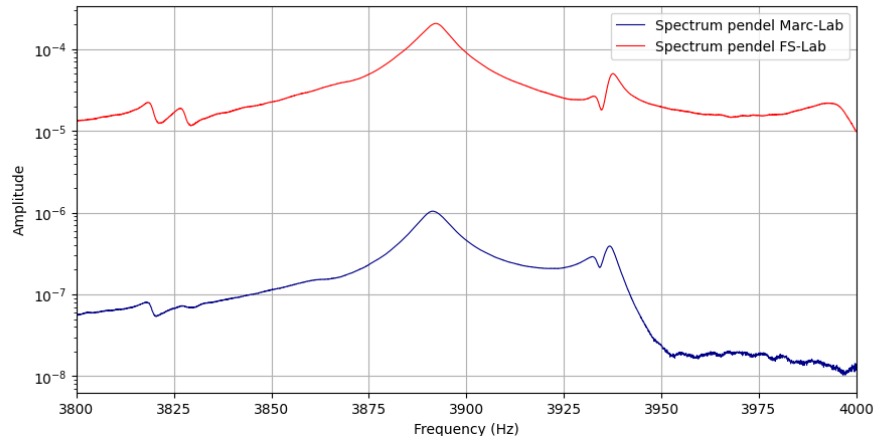


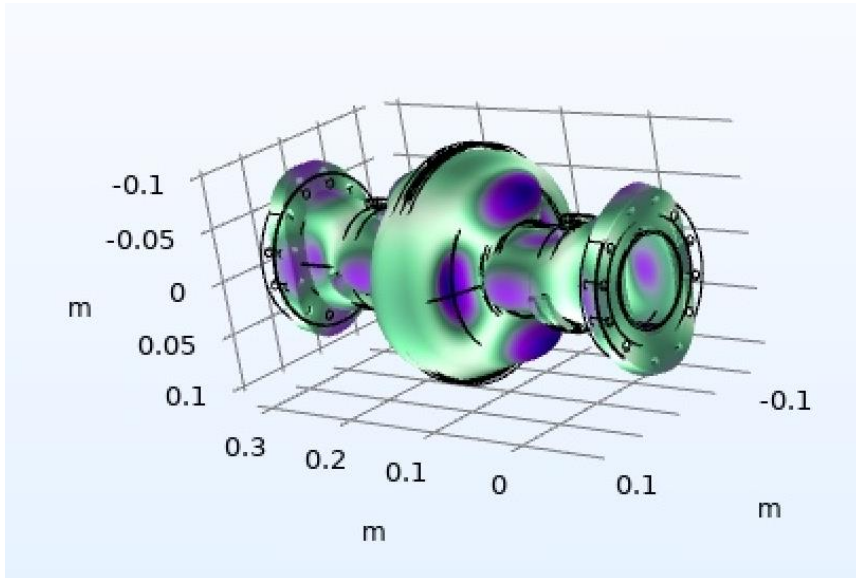
Measurement in FS-Lab

Comparison Measurement FS

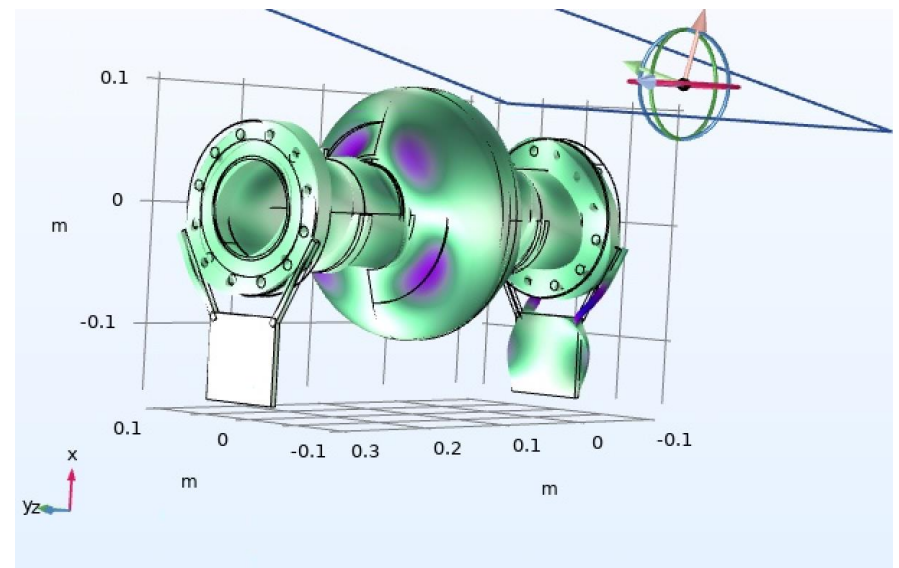


Peak around 3850Hz



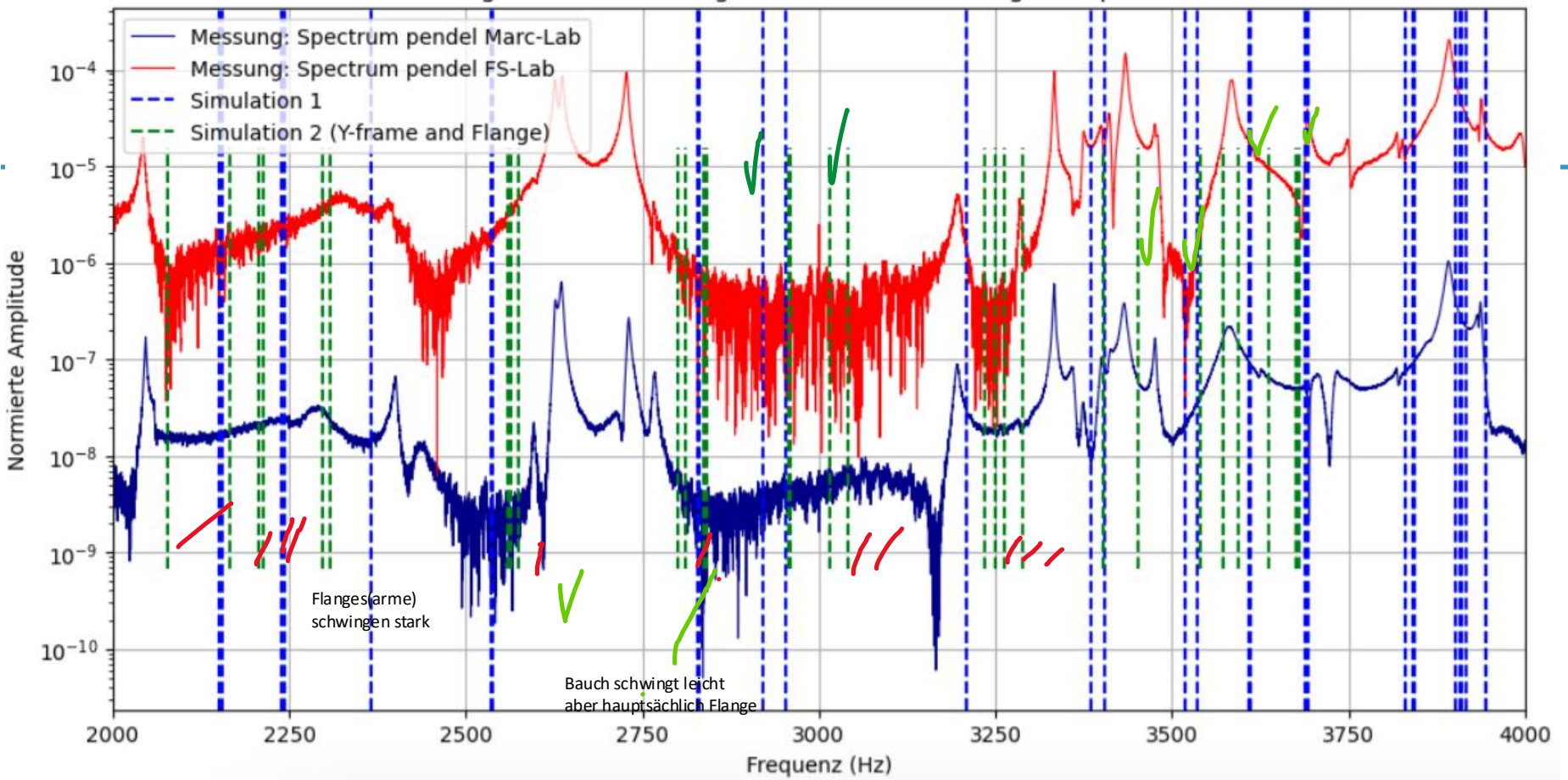


Old Model: Simulation 1

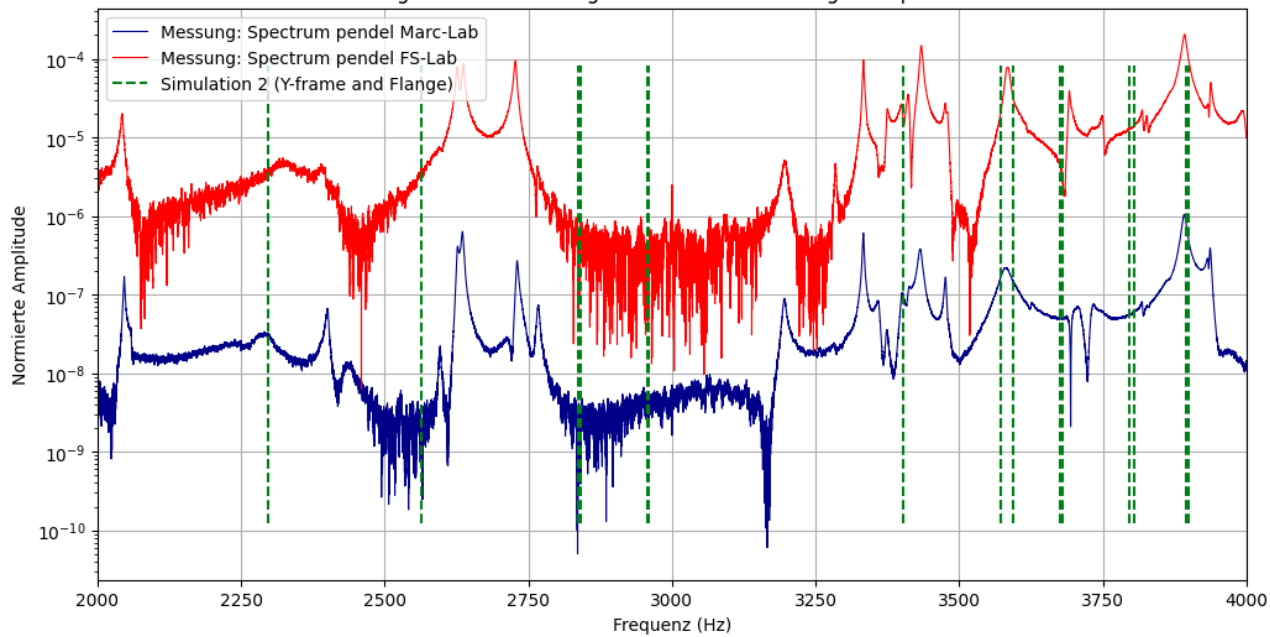


New Model: Simulation 2

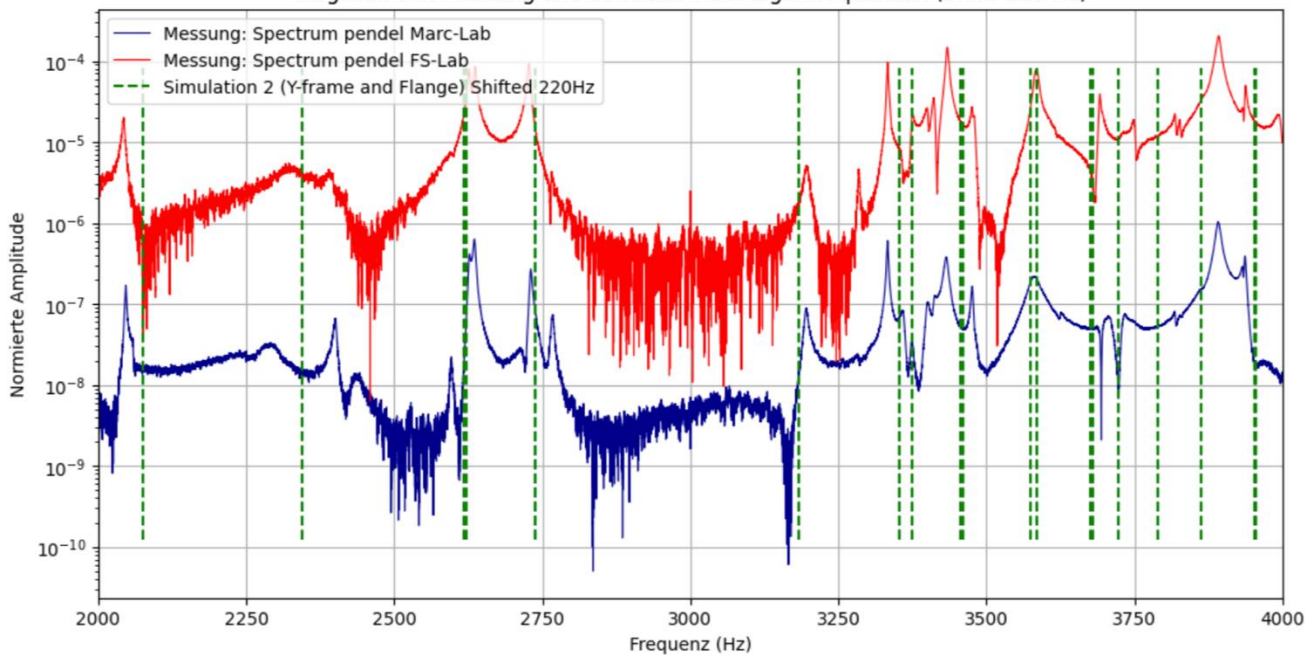
Vergleich von Messung und Simulation der Eigenfrequenzen



Vergleich von Messung und Simulation der Eigenfrequenzen



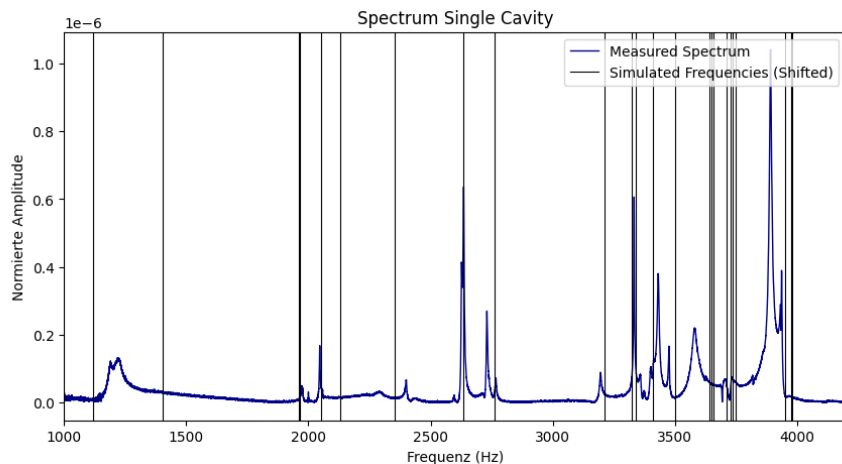
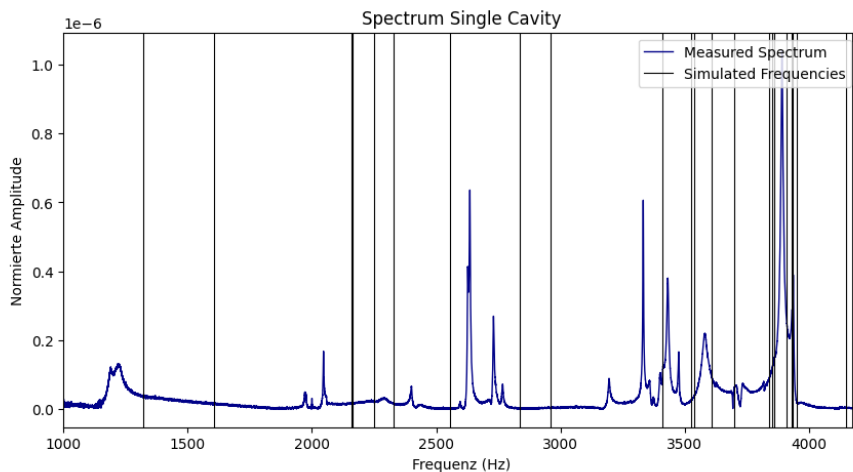
Vergleich von Messung und Simulation der Eigenfrequenzen (Shift: 220 Hz)





Back up slides

Measurement & Simulation



(Method of excitation: Pendulum)

In original Plot (upper Plot) measurement and simulation do not match.

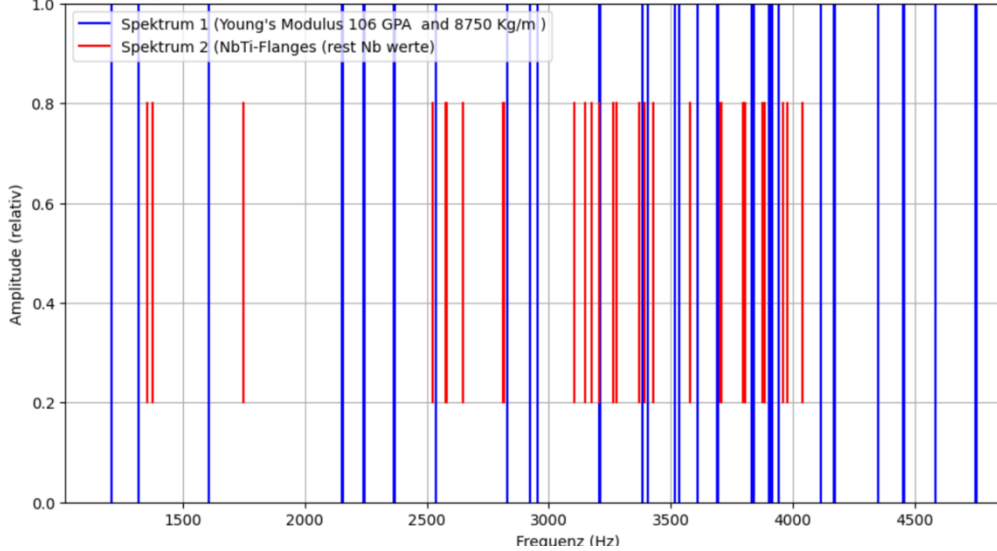
However:

A 200 Hz shift of simulated values improves compliance (lower Plot).

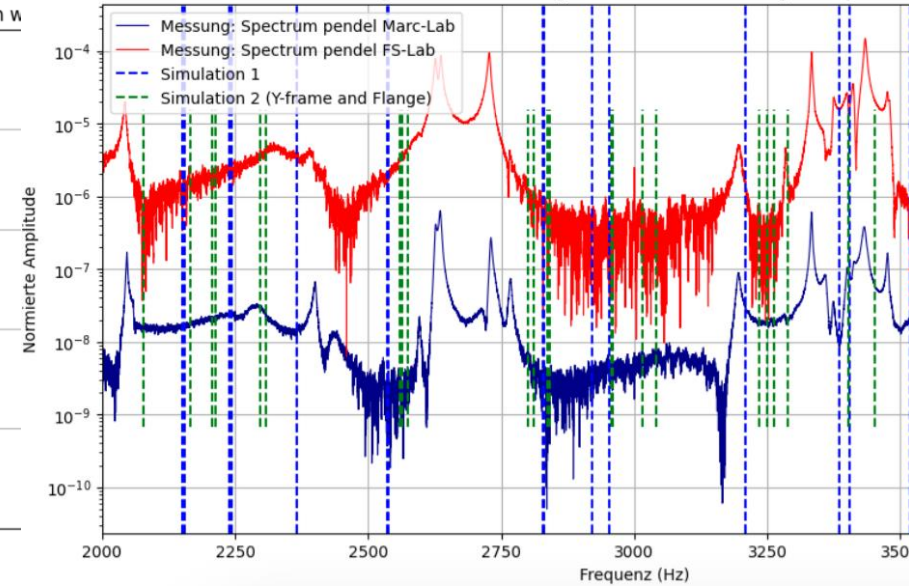
→ Are the simulated values shifted?

- Simulation in Comsol is simplified
 - Missing simulation of mounting
 - no fixed boundaries
 - material propertie constanst could vary (eg. Youngs-Modul)

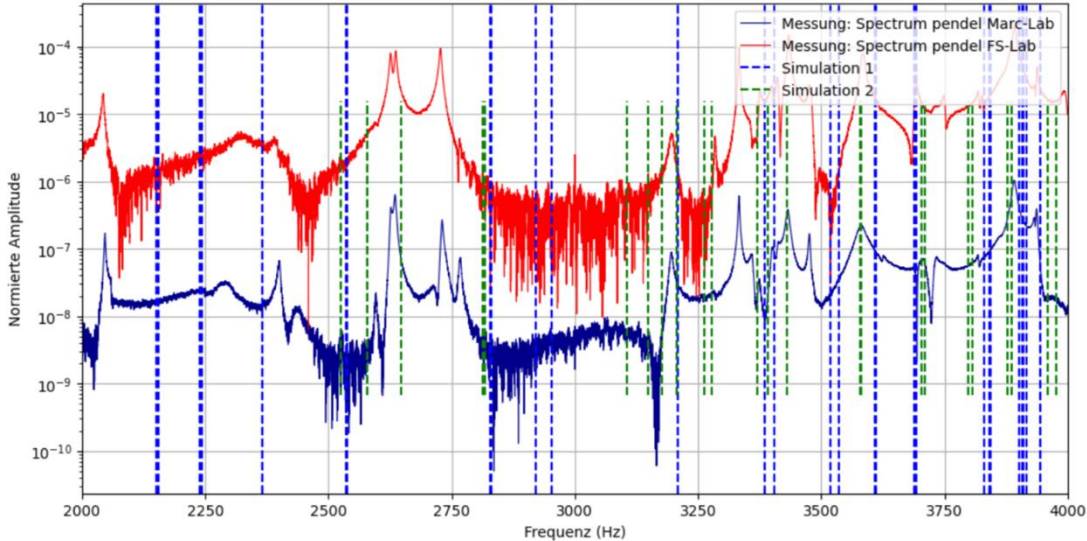
Vergleich der Eigenfrequenzen für mit und ohne NbTi-Flange (NbTi anpassung dichte materieleigenschaften w



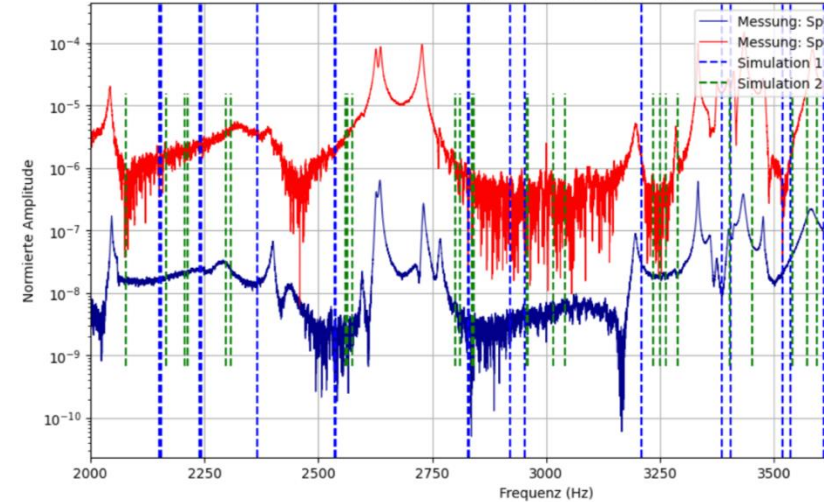
Vergleich von Messung und Simulation der Eigenfrequenzen



Vergleich von Messung und Simulation der Eigenfrequenzen



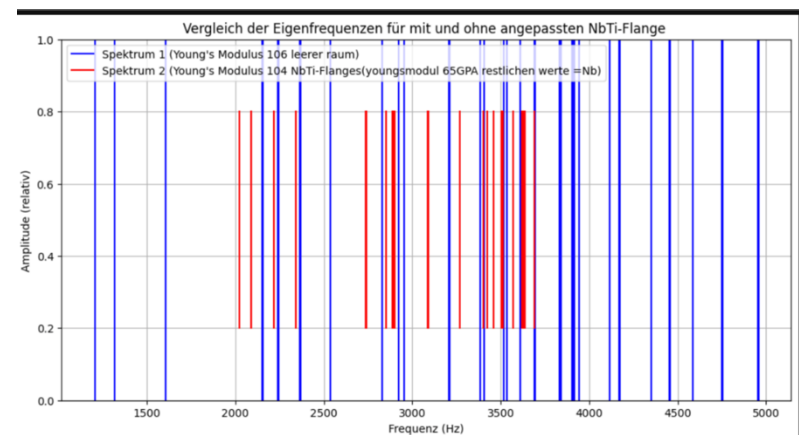
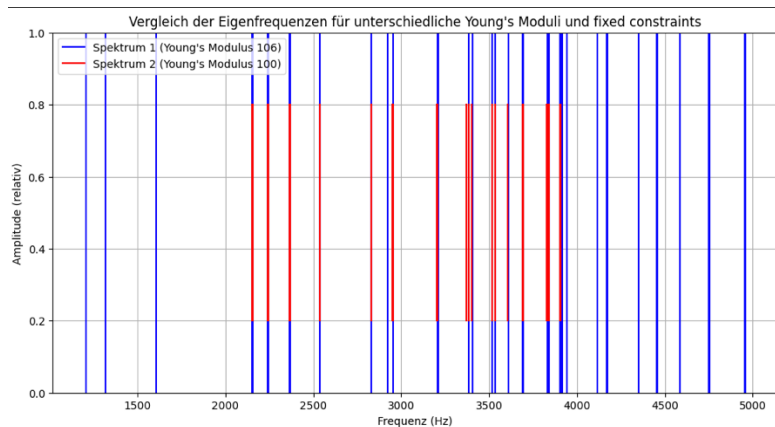
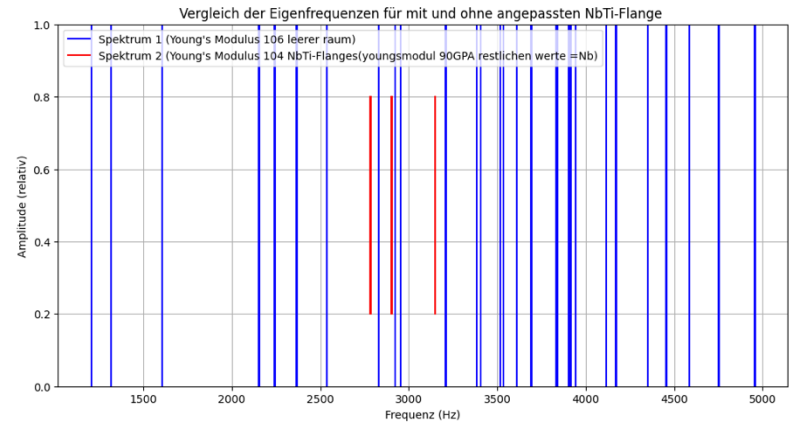
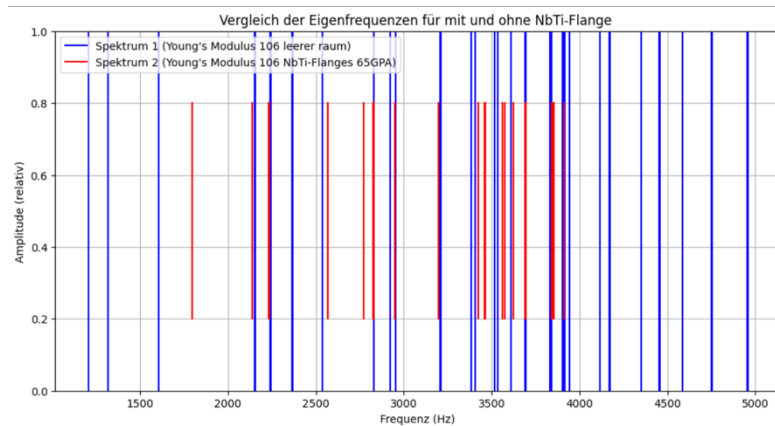
Vergleich von Messung und Simulation der Eigenfrequenzen



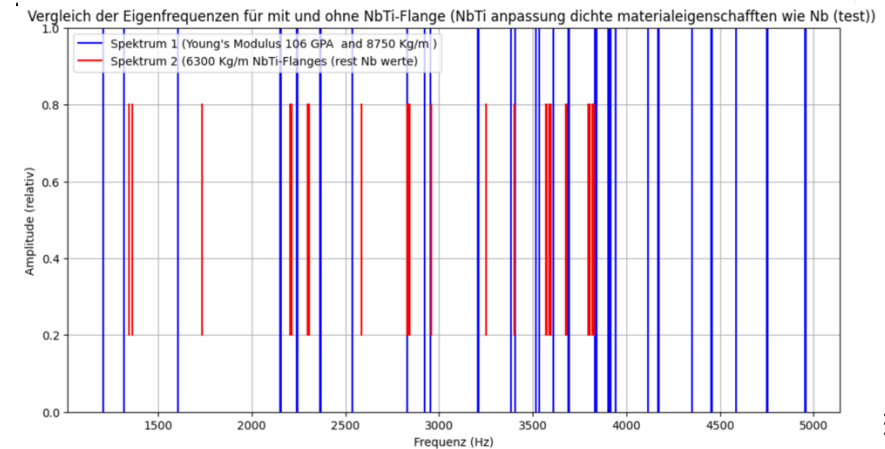
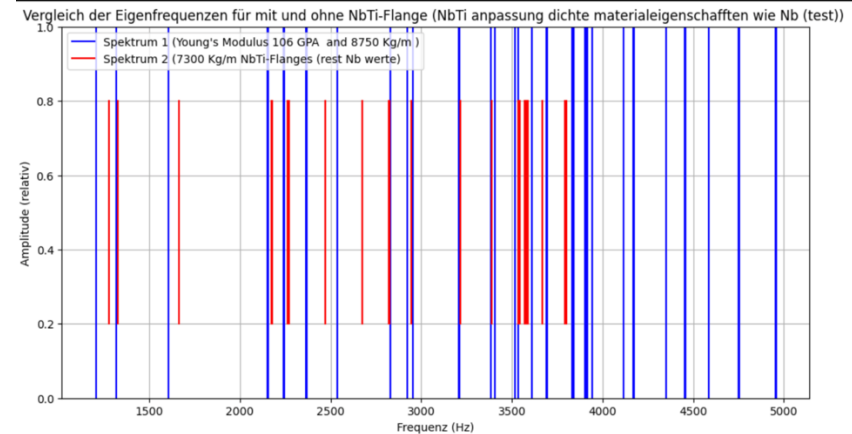
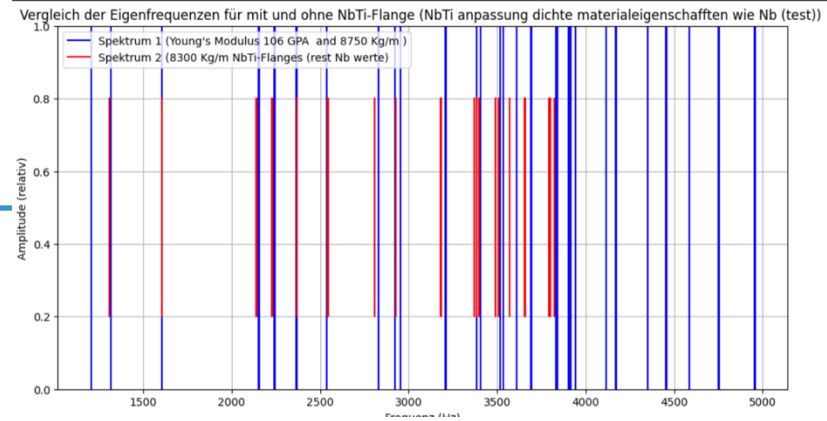
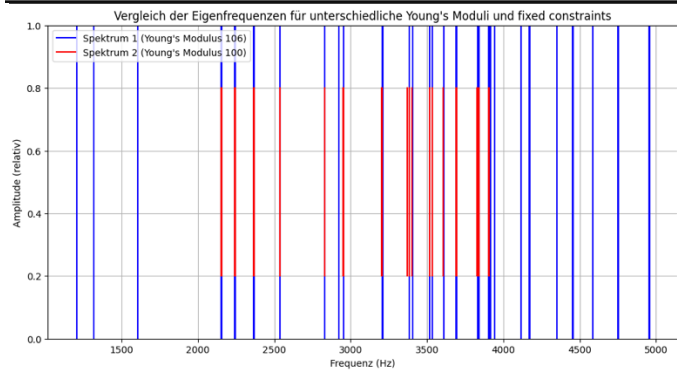
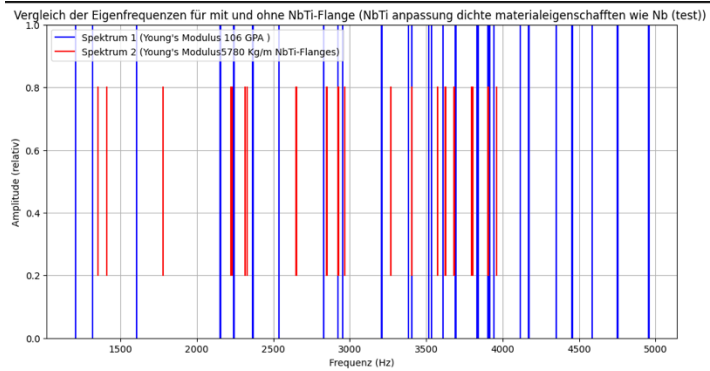
Eine Veränderung des
youngsmoduls an den flangen
schiebt unsere spektrum nach links
(zu dem entstehen neue
eigenfrequenzen an den flangen
die ignoriert werden müssen)

linksOben: mit flanges NbTi

linksunten: ohne flanges (einmal 106G einmal
104GPA)

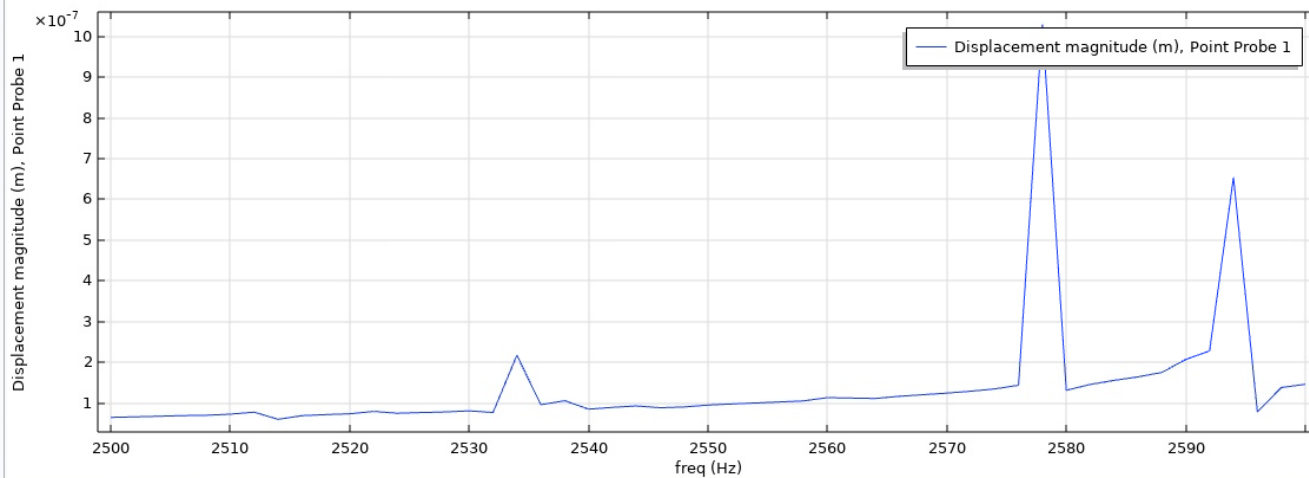
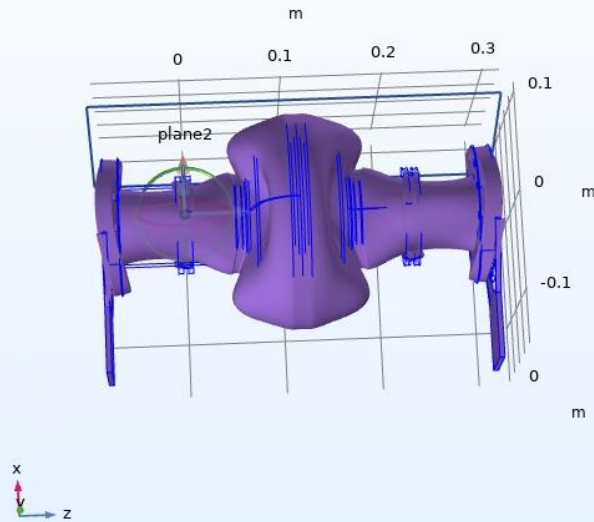
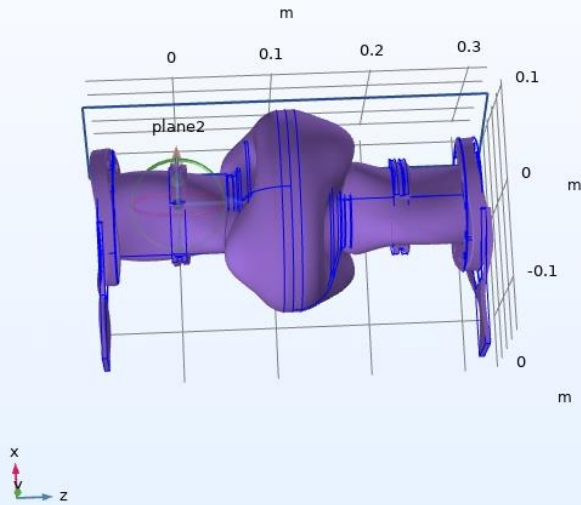


Change in the density of NbTi



Eigenfrequency=2958.2 Hz Surface: Displacement magnitude (cm)

Eigenfrequency=2837.7 Hz Surface: Displacement magnitude (cm)

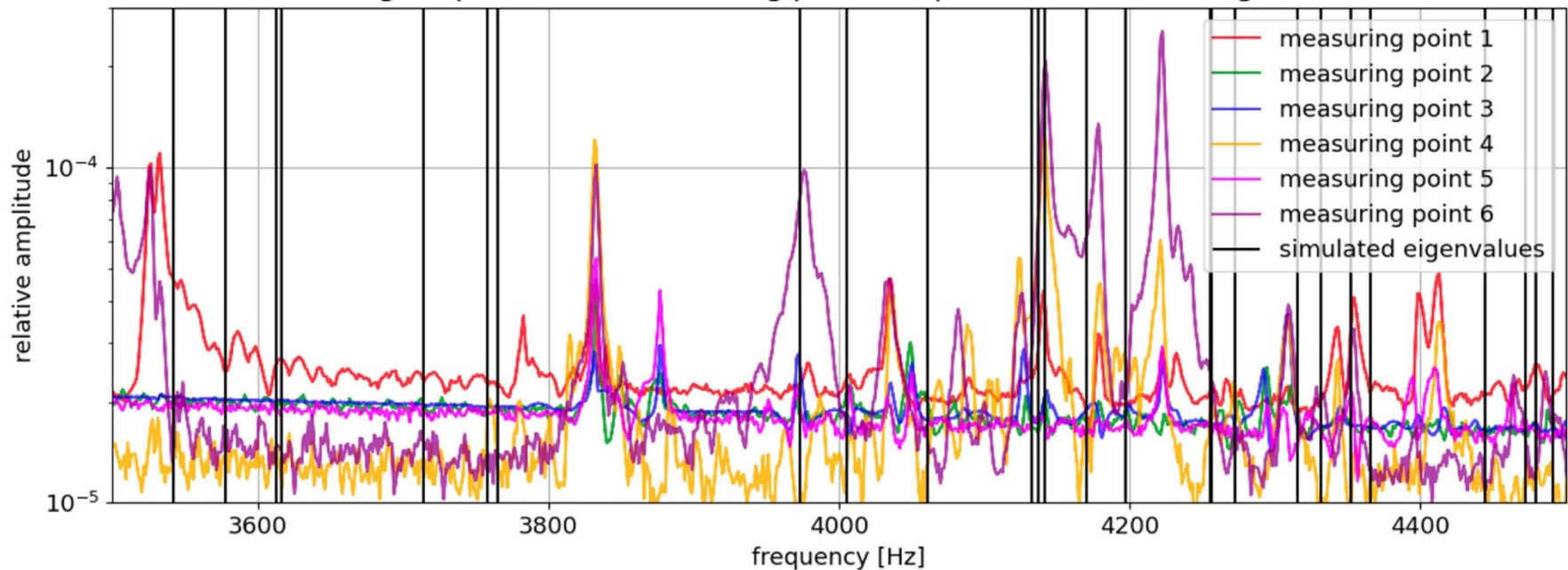


Notizen shift findung:

- Die frequenzen um 2900 und 2800 dienen als referenzpunkte, da ich veermute das dies die gemessenen frequenzen um 2600 und 2700Hz sind. (wegen dem 200Hz shift)
- Da beim verändern der flange zu NbTi neue eigenmoden entshehen, beobachten wir nur diese frequenzen
- Eine point evaluation in comsol gelingt nicht, da es zum erorr kommt, aher etwas nervige analyse per hand.

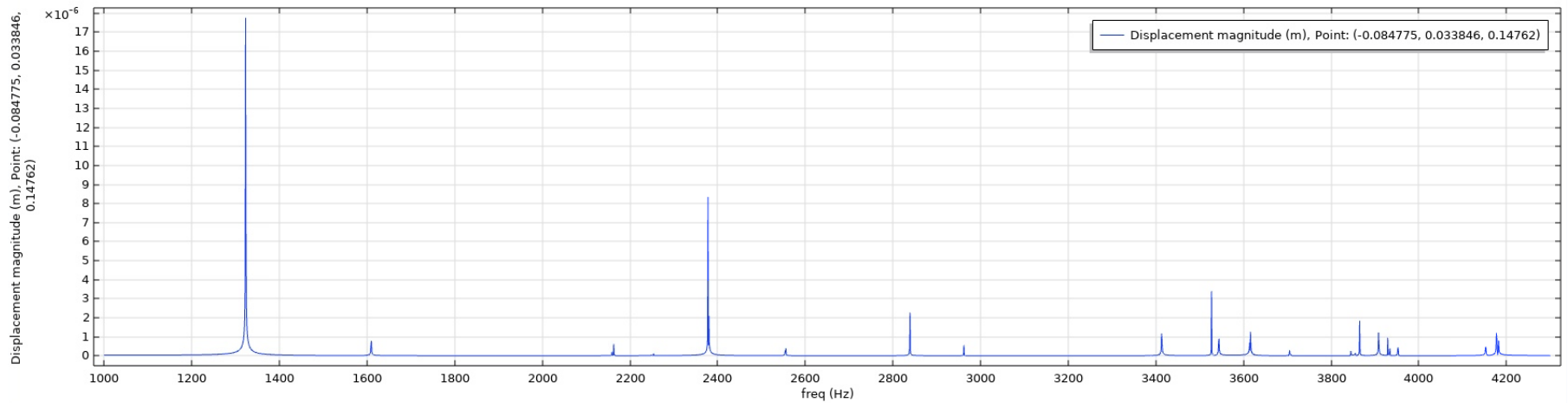
Results of Michel's Bachelor's Thesis:

Averaged spectra of all measuring point compared to simulated eigenvalues

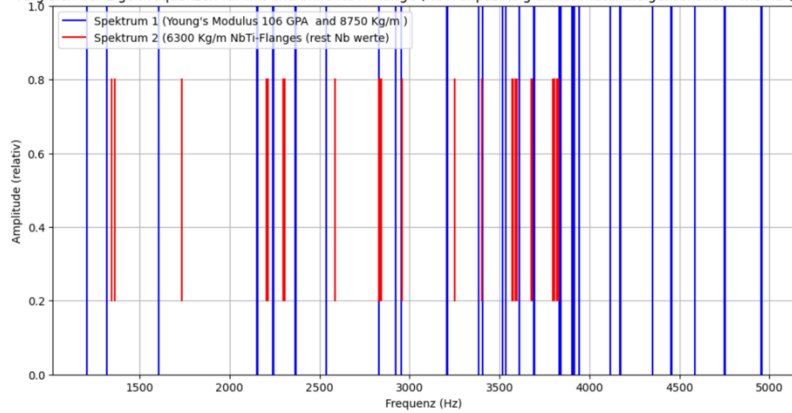


- Simulation values and measured values are far apart
- Interesting peak around 3850 Hz
- Test again with simplified geometry

Simulation Cmsol



Vergleich der Eigenfrequenzen für mit und ohne NbTi-Flange (NbTi anpassung dichte materialeigenschaften wie Nb (test))



Vergleich der Eigenfrequenzen für mit und ohne NbTi-Flange (NbTi anpassung dichte materialeigenschaften wie Nb (test))

