Homework2: Plate with piezoelectric patches

October 31, 2023

Problem description

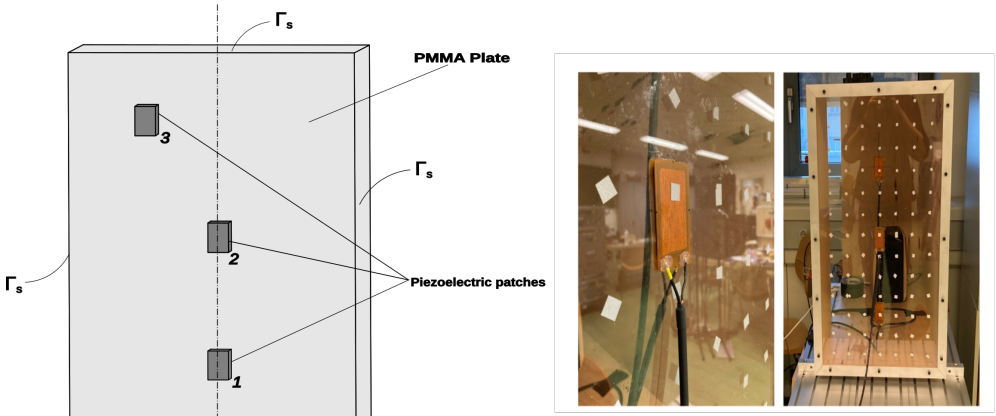

Figure: Model and actual setup

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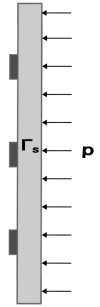
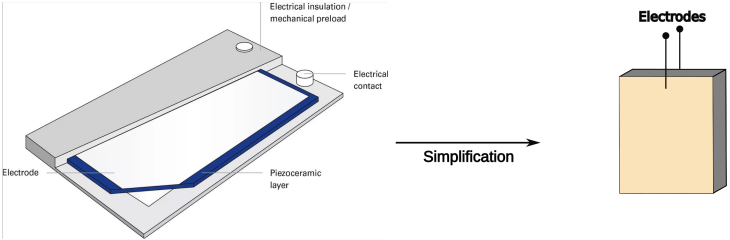


Figure: Side view of the plate

- A pressure load **p** of different types are applied on the back of the plate
- Piezoelectric patches are used as sensors to observe the response

Modelling the piezoelectric patch



- The piezoelectric patch must be simplified for modeling
- Calculate the significant effective material properties using the given data

Modelling assumptions

- The plate is made of homogeneous linear isotropic material

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- Linear piezoelectric constitutive law is used
- Analysis types - static, eigenvalue, harmonic and transient analysis

Tasks

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- Visualize the electric potential

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- Plot transfer functions for the harmonic analysis
- Calculate rayleigh damping for transient analysis

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- Look at the frequency domain of the transient response

Important points

- Deadline is on 19.12.2023 at 23:59
- Questions and Answers sessions - 06.12.2023 and 13.12.2023
- Follow the structure while creating the report
- Use the TUWEL forum to ask doubts