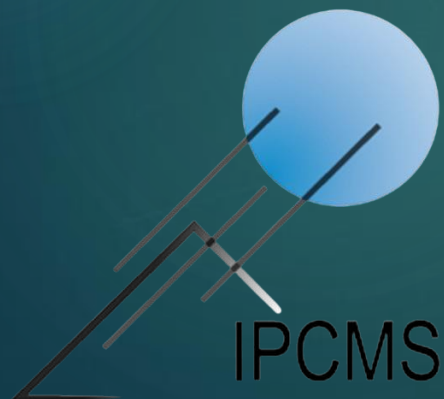


Mechanically detected magnetic transitions in a suspended 2D membrane

Under the supervision of Arnaud Gloppe and Quentin Fenoy



Kemmiri Mehdi

Université

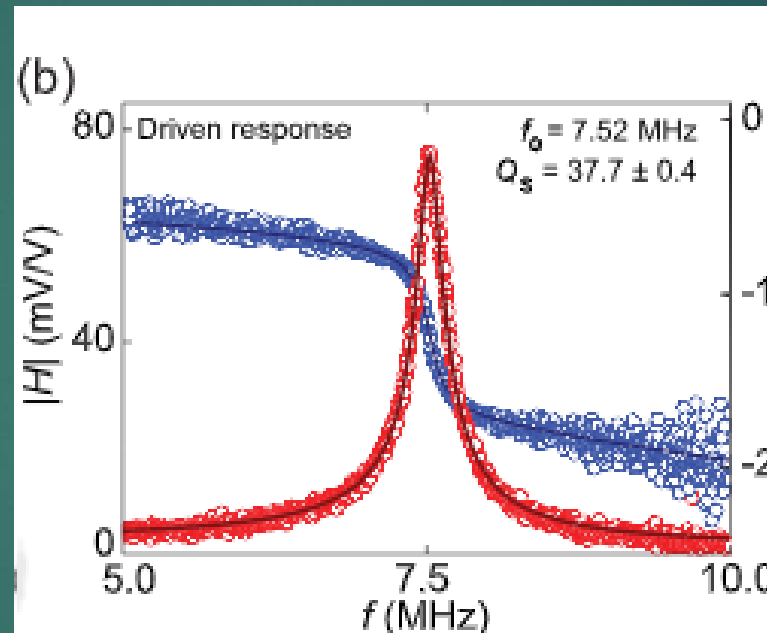
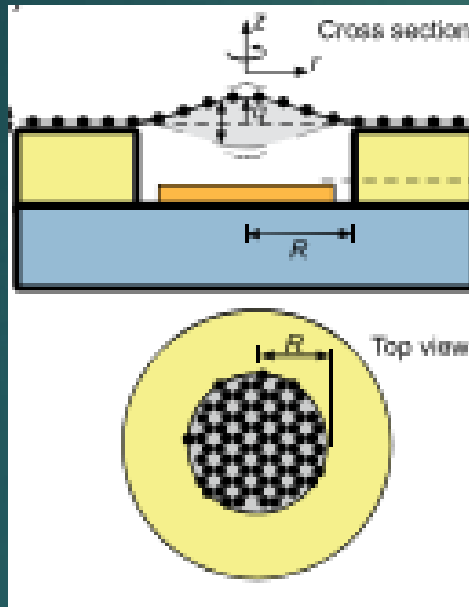
de Strasbourg

Summary

- PHYSICS OF MEMBRANE
- MOTIVATION FOR THE EXPERIMENT
- THE EXPERIMENT
- DATA AND ANALYSIS
- CONCLUSION

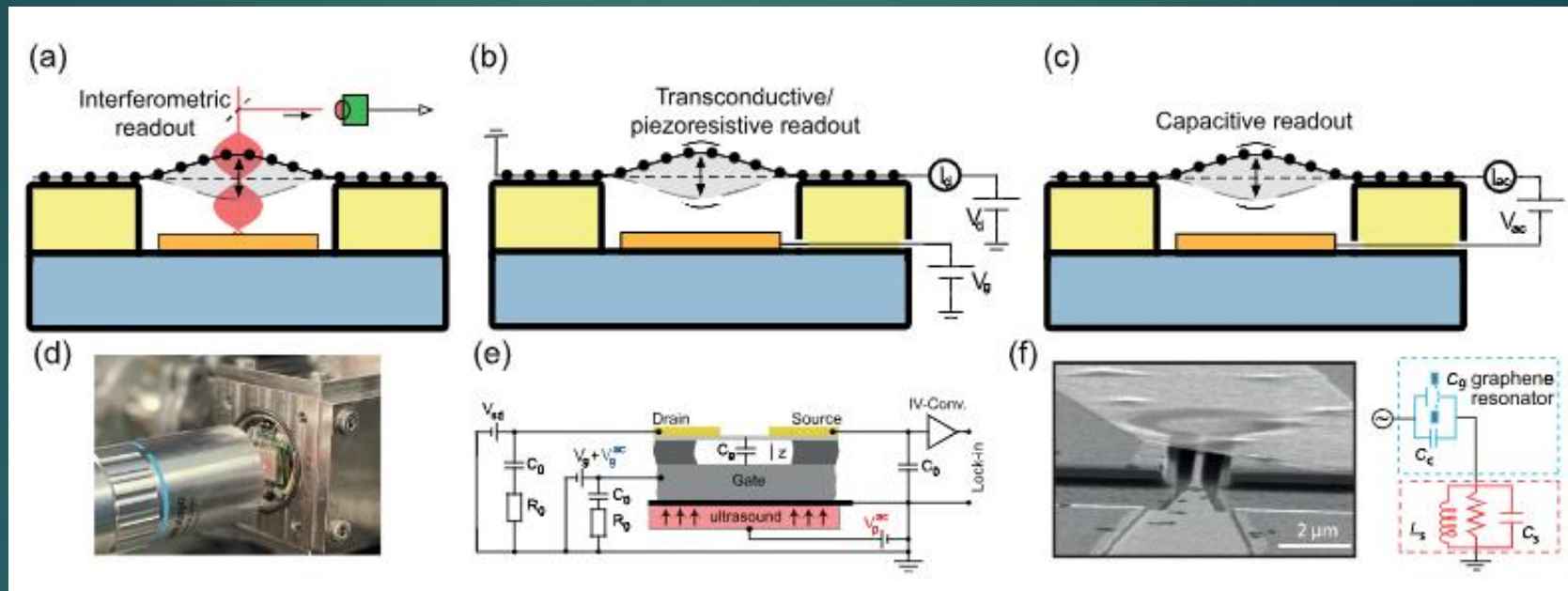
Physics of membrane

Physics of membrane



Dynamics of 2D material membranes, P. G. Steeneken, 2021

Physics of membrane

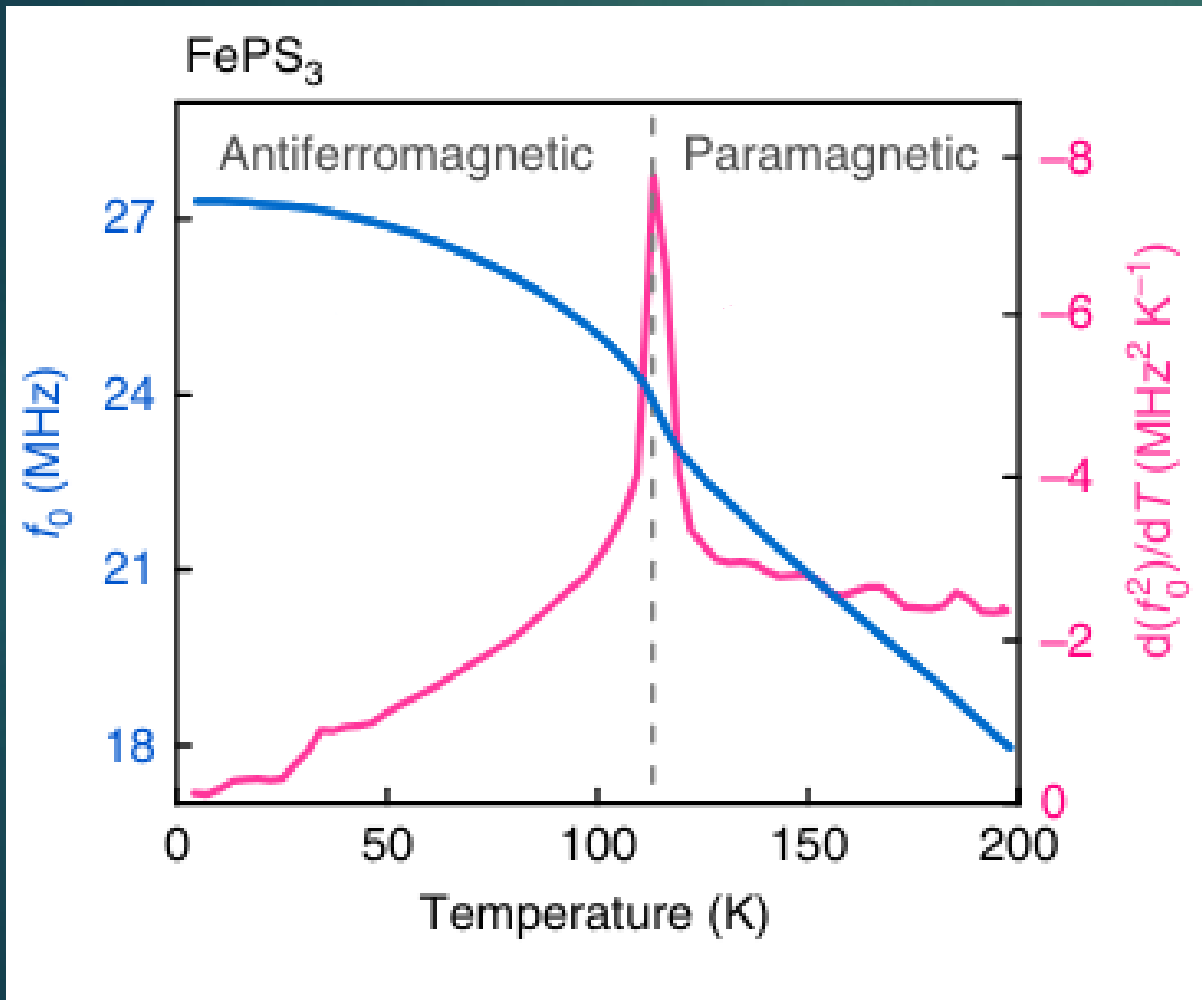


Dynamics of 2D material membranes, P. G. Steeneken, 2021

Motivation of the experiment

Motivation of the experiment

7



Magnetic and electronic phase transitions probed by nanomechanical resonators, M. Siskins, 2020

The experiment

IN WHICH CONTEXT AND HOW DO WE ACQUIRE THE DATA ?

The experiment

What are we experimenting on ?

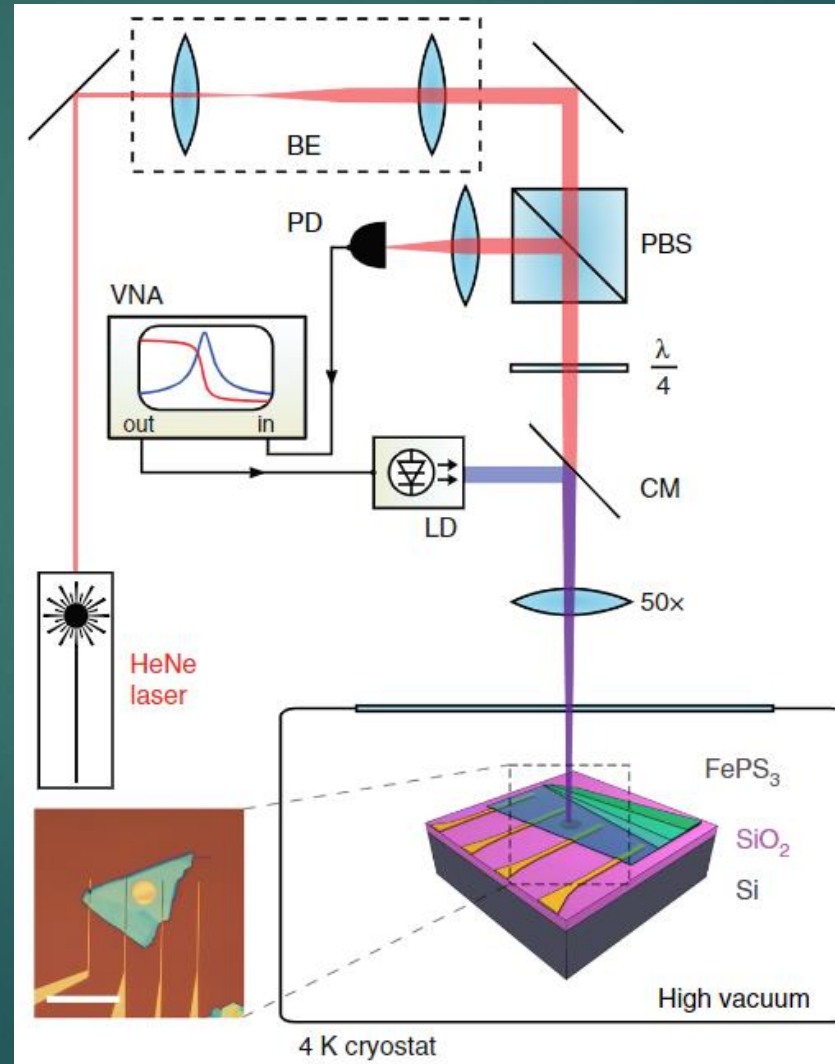
9



The experiment

What is our context ?

10

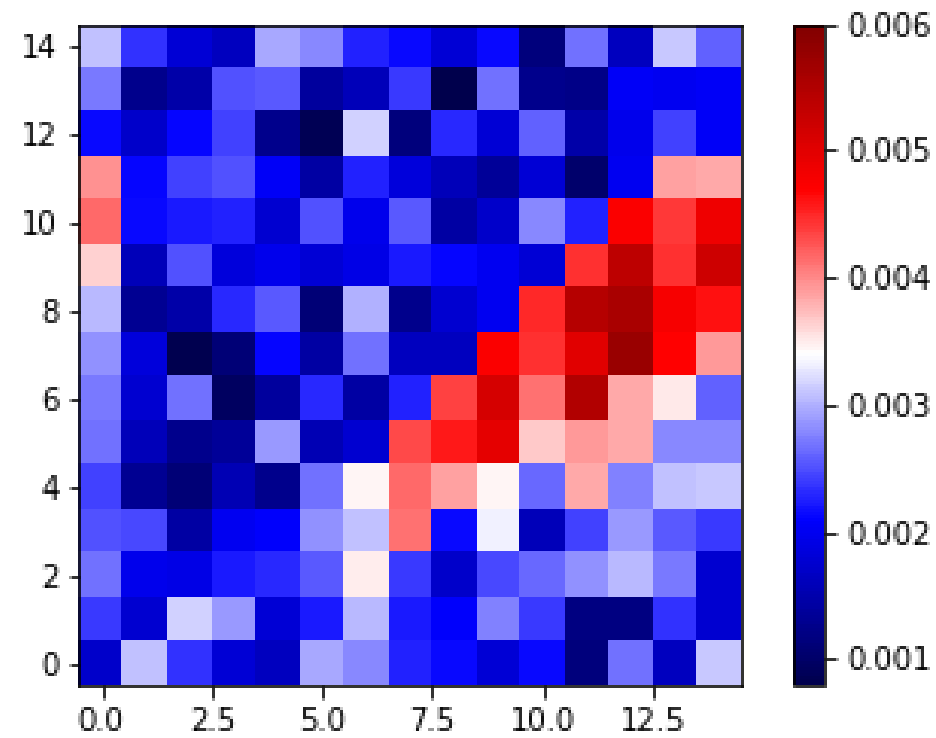


Magnetic and electronic phase transitions probed by nanomechanical resonators, M. Siskins, 2020

Data and analysis

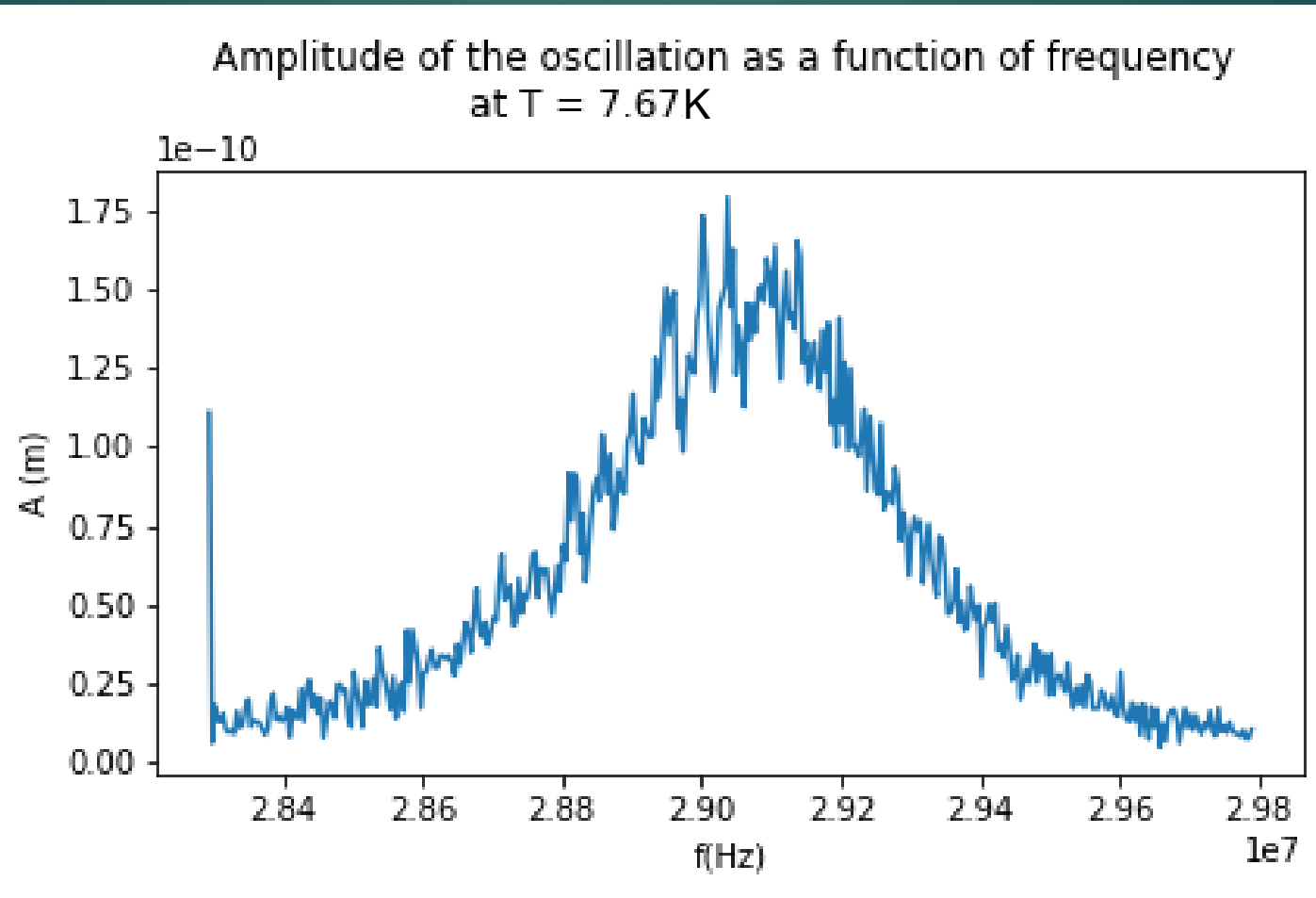
Data and analysis

12



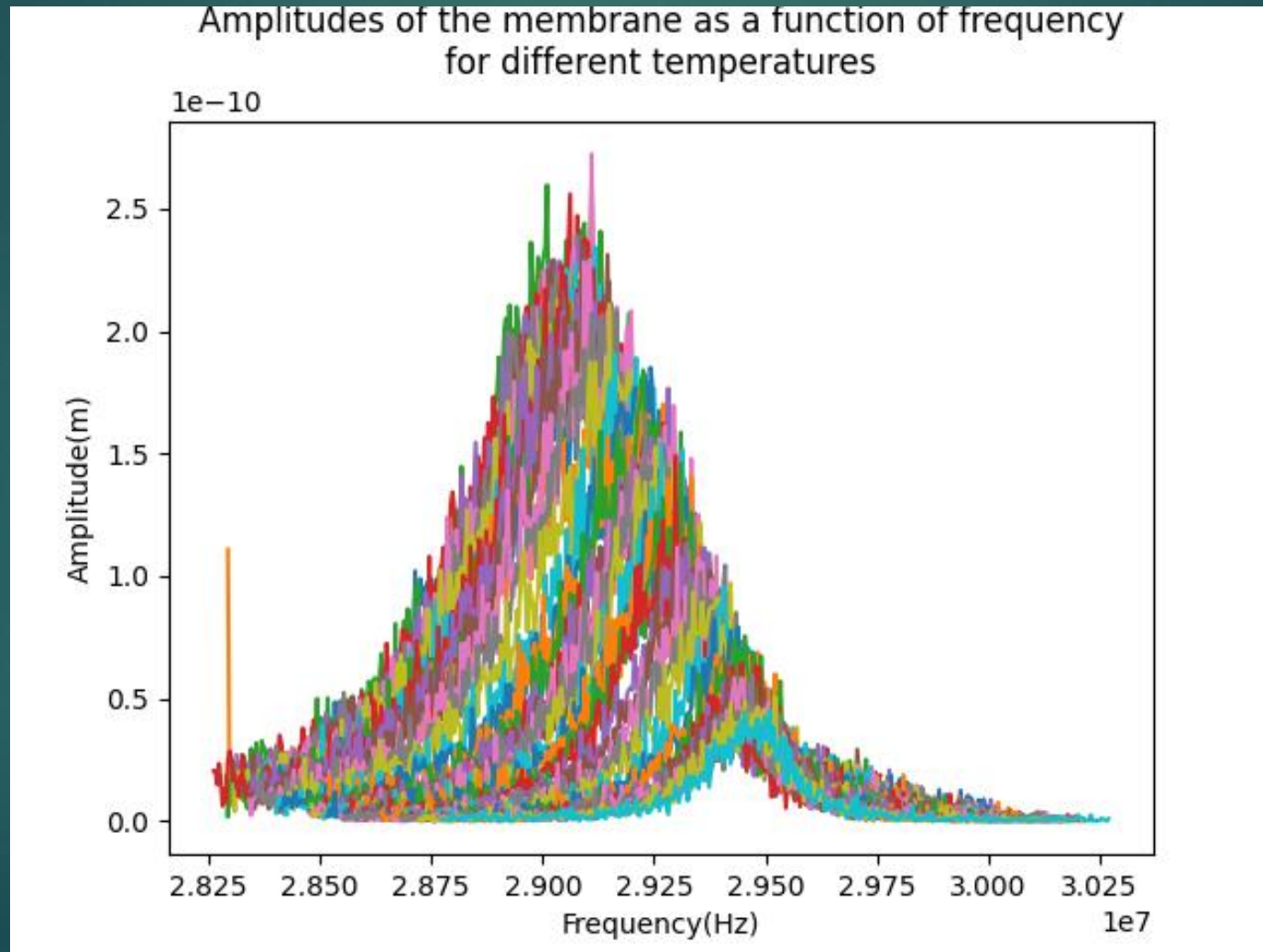
Data and analysis

13



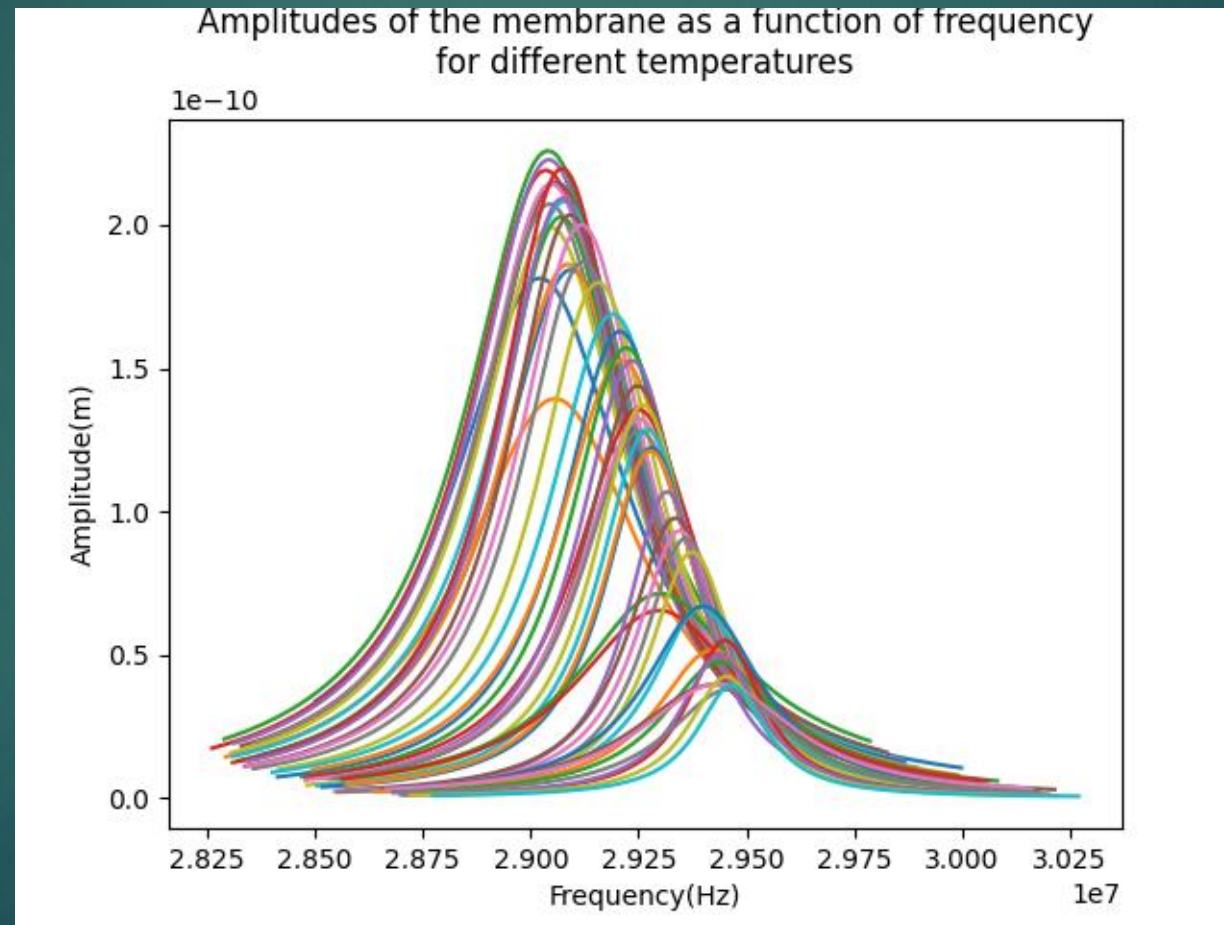
Data and analysis

14



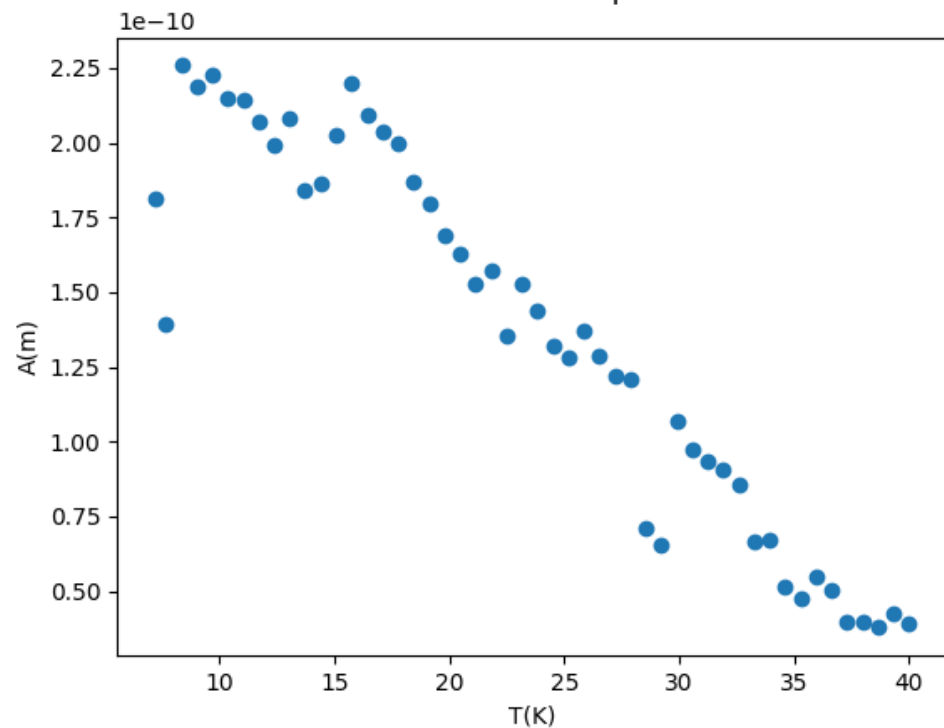
Data and analysis

15

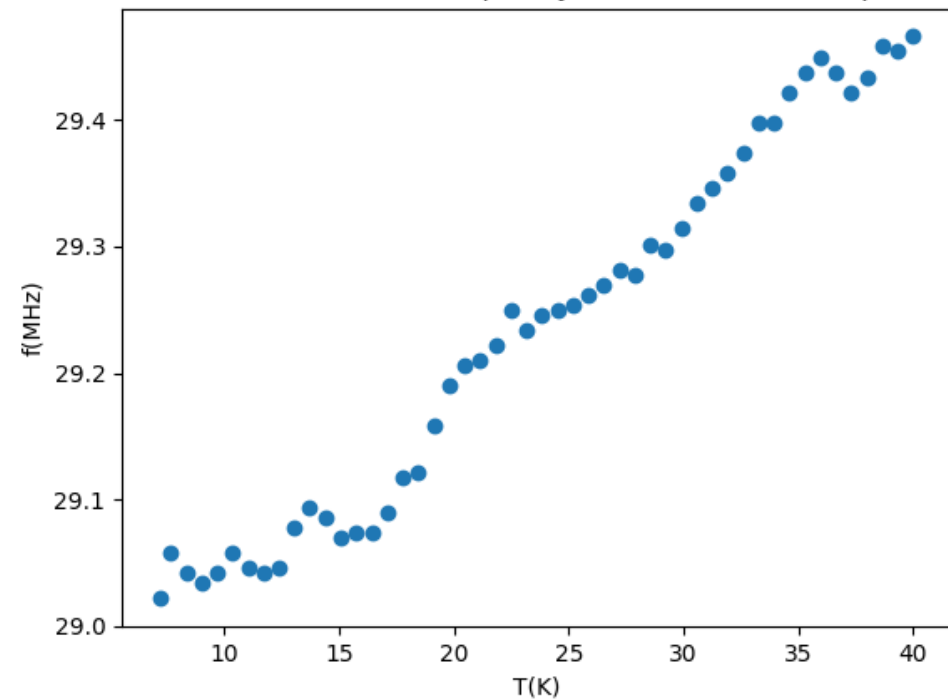


Data and analysis

Values of the amplitude at the resonance frequency as a function of temperature



Values of the resonance frequency as a function of temperature

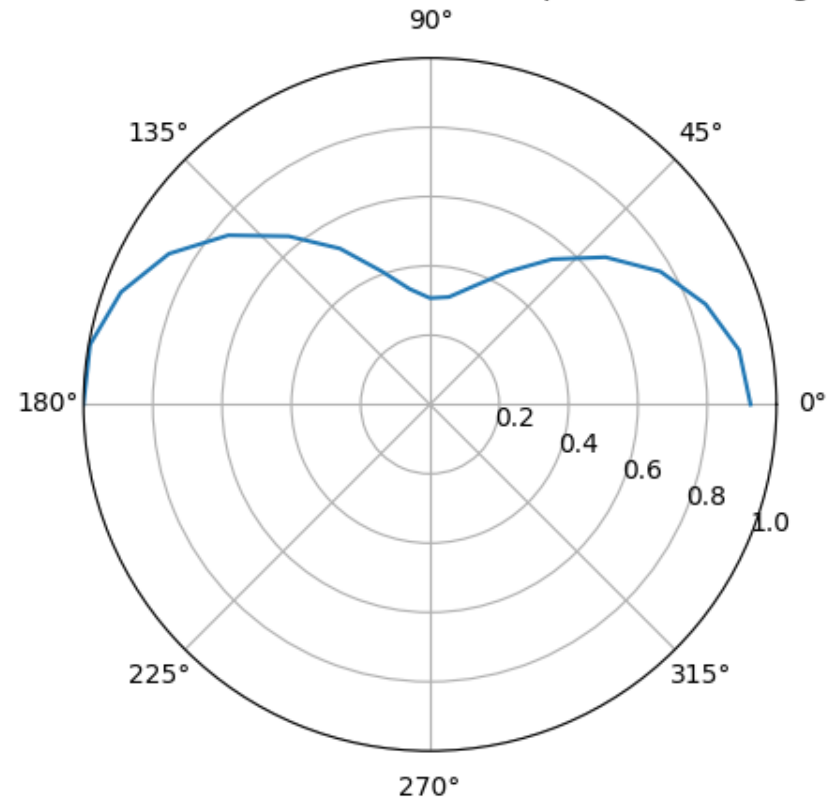


Conclusion

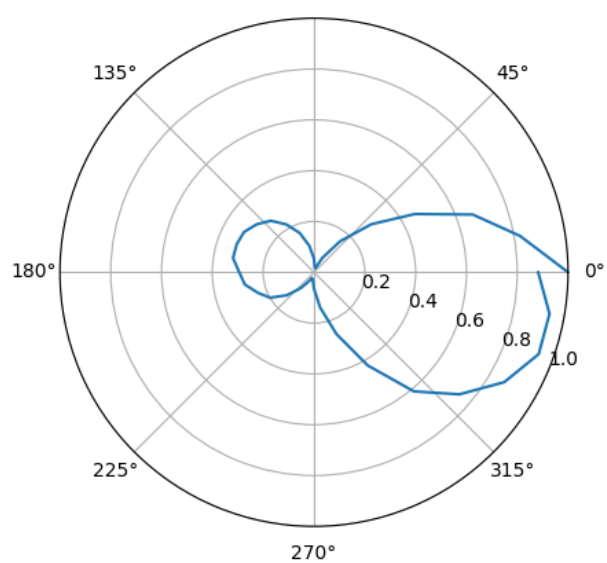
- ▶ The data seems to show the same comportement than in the Siskins' paper
- ▶ Further research are needed to show the presence or not of orther pysical effects in the experiment

Appendices

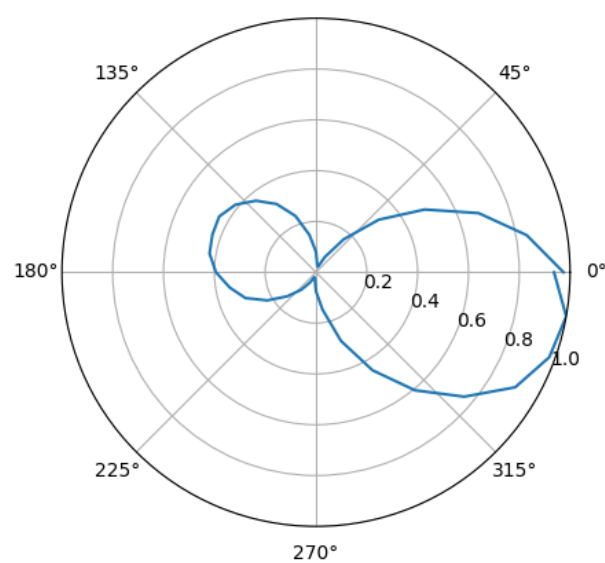
Mesure de l'intensité du laser réfléchi polarisé d'un angle :50°



Mesure de l'intensité du laser réfléchi polarisé d'un angle :90°_0T



Mesure de l'intensité du laser réfléchi polarisé d'un angle :90°_1T



Mesure de l'intensité du laser réfléchi polarisé d'un angle :90°_out_of_hole

