Germanium detektor og neutronaktivering

Name [*1] and Laurits N. Stokholm [†1]

[1] *Department of Physics and Astronomy, Aarhus University*

June 2, 2018

Abstract

This paper is written as the of four mandatory repports during the course *Experimental Physics III*.

In the experiment we will be working with ...

At last ....

This resulted in ... in confirmation of the theory

1 Introduction

2 Theory

3 Experimental Setup

4 Data

5 Discussion

6 Conclusion

References

Griffiths, David J. *Introduction to Electrodynamics*. Cambridge, 2017. ISBN: 978-1-108-42041-9.

Jensen, Jens Ledet. *Statistik viden fra data*. Aarhus Universitetsforlag, 2012. ISBN: 978-87-7124-0245.

7 Appendix

[*] mail

[†] 201605496@post.au.dk

Logbook

Anne Kirstine Knudsen*

Laurits N. Stokholm†

June 2, 2018

1 Problem and Aim

- Set up a Michelson Interferometer
- Determination of the expansion coefficient of a piezoelectric element
- Study the effect of intensity differences of the interferometer arms

Research method

Figure 1: Sketch of a Michelson interferometer. The beam from the laser (1) is aimed at the beam splitter (2) which divides the beam into two partial beams. The two beams are reflected by the mirrors (3). An interference pattern can be observed on the screen/detector (4)

*anne839i97@gmail.com
†laurits.stokholm@post.au.dk

Planning

Experimental Equipment Available

- Breadboard
- HeNe-laser
- Photo-detector
- 4 mirrors
- 1 Pieze element
- 3 Lenses ($f = 50\,\text{mm}, -50\,\text{mm}, 150\,\text{mm}$)
- 2 beam splitter cubes
- 1 $\frac{\lambda}{4}$-plate
- 1 Neutral density filter wheel
- A glass cell
- 2 Black dumping screens
- Set of screwdrivers + powersupplies

Practical/ Technical notes

One should be aware of the following:

I The optical breadboard with all its components is very heavy, so take care when taking it out of the cabinet and back again.

II Remember laser light can be harmful, so be careful also with parasitical beams!

III Remember not to touch any optics on the surfaces on which light in impinging!

IV Do only apply voltages in the range 0-10V to the control input of the piezodriver, and do not drive it at a frequency of more than 200 Hz. Hence, check and adjust the output of the function generator with the Pico Scope before connecting it to the piezo-driver. The voltage delivered to the piezo should be a factor of 10 higher than the control voltage (check backside of the piezo-driver).

V Remember to take clear pictures of you various setups, including the electronic wiring.

VI At the end of each experimental session, remember to safely fix all the optical elements to the breadboard in positions similar to those on Fig. 1., and bring everything back in good order in the cabinets!