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DISSERTATION

Cool Science

ausgeführt am Atominstitut



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Fakultät für Physik

unter der Anleitung von
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“The Setesh guard’s nose drips.”
TEAL’C

Abstract

Short and sweet...

Zusammenfassung

Kurz und bündig...

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1. Chapter 1

List of class options:

***** General settings *****

1. 'a4paper' or 'a5paper'
2. '11pt', '12pt'(default) or '10pt' however font size 10pt is NOT recommended
3. 'print': Use 'print' for print version with appropriate margins and page layout. Leaving the options field blank will activate Online version.
4. 'signed': Use 'signed' to add section on titlepage to be signed by the supervisor. Works only with the print option!
5. 'declaration': adds a page with an declaration after the titlepage, to be signed by the author Works only with the print option!
6. 'final': option some packages might need for the finalized document
7. 'place': insert place and date on the title page
8. 'index': For index at the end of the thesis
9. 'abstract': To generate only the title page and abstract page with dissertation title and name for submission somewhere
10. 'chapter': This option enables only the specified chapter and its references Useful for review and corrections.
11. 'titlepage2': This option loads the alternative titlepage titlepage_alternative instead of titlepage_official. This intended to have two designs available and quickly switch between them.

***** Draftmode settings *****

12. 'draftclassic': For draft mode without loading any images (same as draft in scrbook) and notes
13. 'draft': Special draft mode with line numbers, images, and water mark with timestamp and custom text. Position of the text can also be modified.

14. ‘nolinenumbers’: disable line numbers in draft mode !!!When toggled auxiliary files must be deleted. 1
2
15. ‘todonotesoff’: manually disable todonotes (has to be loaded after draft options) 3
Add notes with follwing commands in the draft mode: 4
- `\mynote{text}` -> green note on the side pointing to the location 5
`\sidenote{text}` -> blue note on the side 6
`\needref{text}` -> blue note on the side pointing to the location 7
`\urgentnote{text}` -> red note on the side pointing to the location 8
`\inlinenote{text}` -> orange inline note 9
`\missingfigure[figwidth=length]{text}` -> dummy picture 10
11
- In the index section a list of todonotes is printed. !!!You must not use underscore in the missingfigure argument. !!!Line numbers and todo notes are not really compatible. 12
13
14
16. ‘bibdebug’: debug mode for BibLaTeX 15
- ***** Custom Page Margins ***** 16
17. ‘custommargin’: Use ‘custommargin’ in options to activate custom page margins, which can be defined in the preamble.tex. Custom margin will override print/online margin setup. 17
18
19
- ***** Choosing the Fonts in Class Options ***** 20
18. ‘times’: Times font with math support 21
19. ‘fourier’: Utopia Font with Fourier Math font (Font has to be installed) It’s a free font. 22
23
20. ‘customfont’: Use ‘customfont’ option in the document class and load the package in the preamble.tex 24
25
default or leave empty: ‘Latin Modern’ font will be loaded. 26
- ***** Bibliography settings ***** 27
21. ‘biblatex’: use the package BibLaTeX instead of natbib packages 28
22. ‘bibsections’: list references by parts/chapters/sections (settings in header) 29
23. ‘bibtex’: use BibTeX as backend for BibLaTeX to sort references from .bib file (by default Biber is used) 30
31
24. ‘bibtex8’: use BibTeX8 (UTF-8 support) as backend for BibLaTeX to sort references from .bib file (by default Biber is used) 32
33

1 ***** Choosing the Bibliography style *****

2 25. ‘authoryear’: For author-year citation eg., Krishna (2013)

3 26. ‘numbered’: (Default Option) For numbered and sorted citation e.g., [1,5,2]

4 27. ‘custombib’: Define your own bibliography style in the ‘preamble.tex’ file.

5 `\RequirePackage}{square, sort, numbers, authoryear}{natbib}`

6 . This can be also used to load biblatex instead of natbib

7 The equation from [1, 2] and [3]

$$8 \qquad \langle n \rangle_{\text{BE}} = \frac{1}{e^{\beta(\epsilon - \mu)} - 1}, \qquad (1.1)$$

9 was inserted with by using the short-cut `\cmd` + `n`, which gives a labelled "eqn"
10 environment.

2. Chapter 2

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Here some Pgf exemplary plots.

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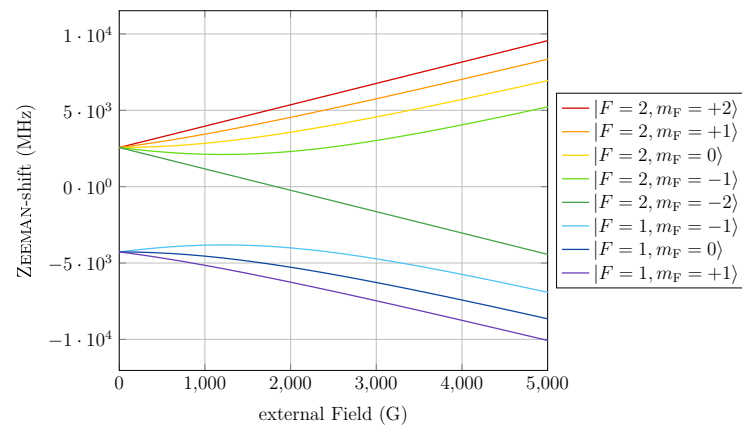


Figure 2.1.: ZEEMAN splitting of the ^{87}Rb ground state $5^2\text{S}_{1/2}$.

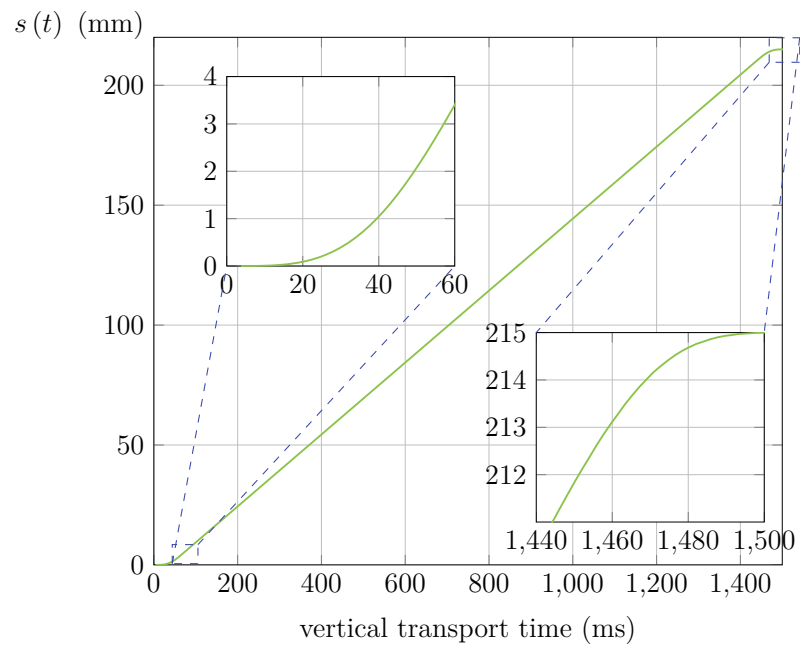


Figure 2.2.: pgf plot with zoom

3. Chapter 3

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This chapter contains a few Tikz sketches and diagrams as a inspiration and guide line to create your own Tikz figures.

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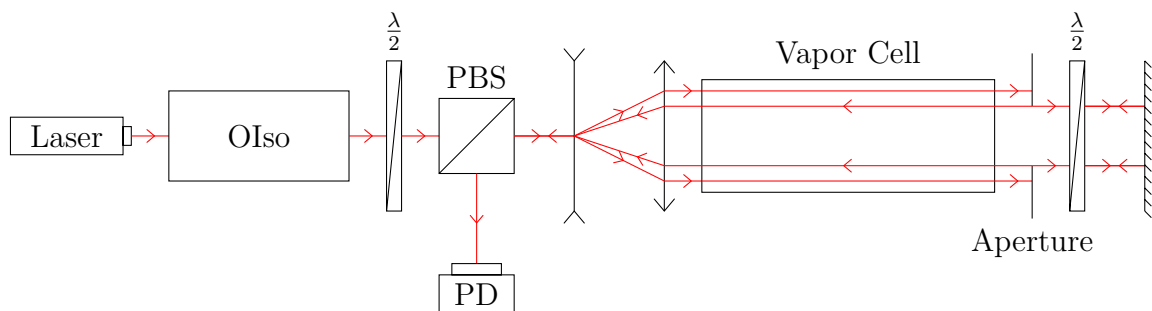


Figure 3.1.: optical setup for a DOPPLER free spectroscopy

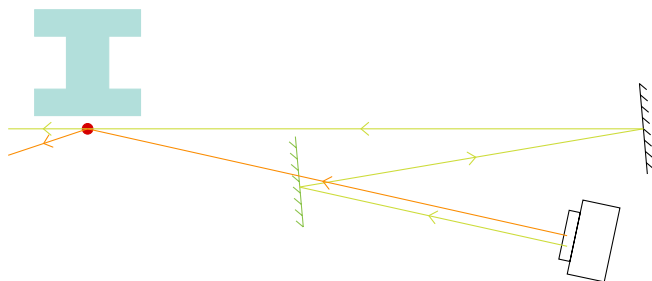


Figure 3.2.: optics sketch 1

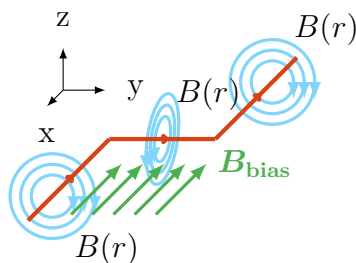


Figure 3.3.: Trapping atoms with wires.

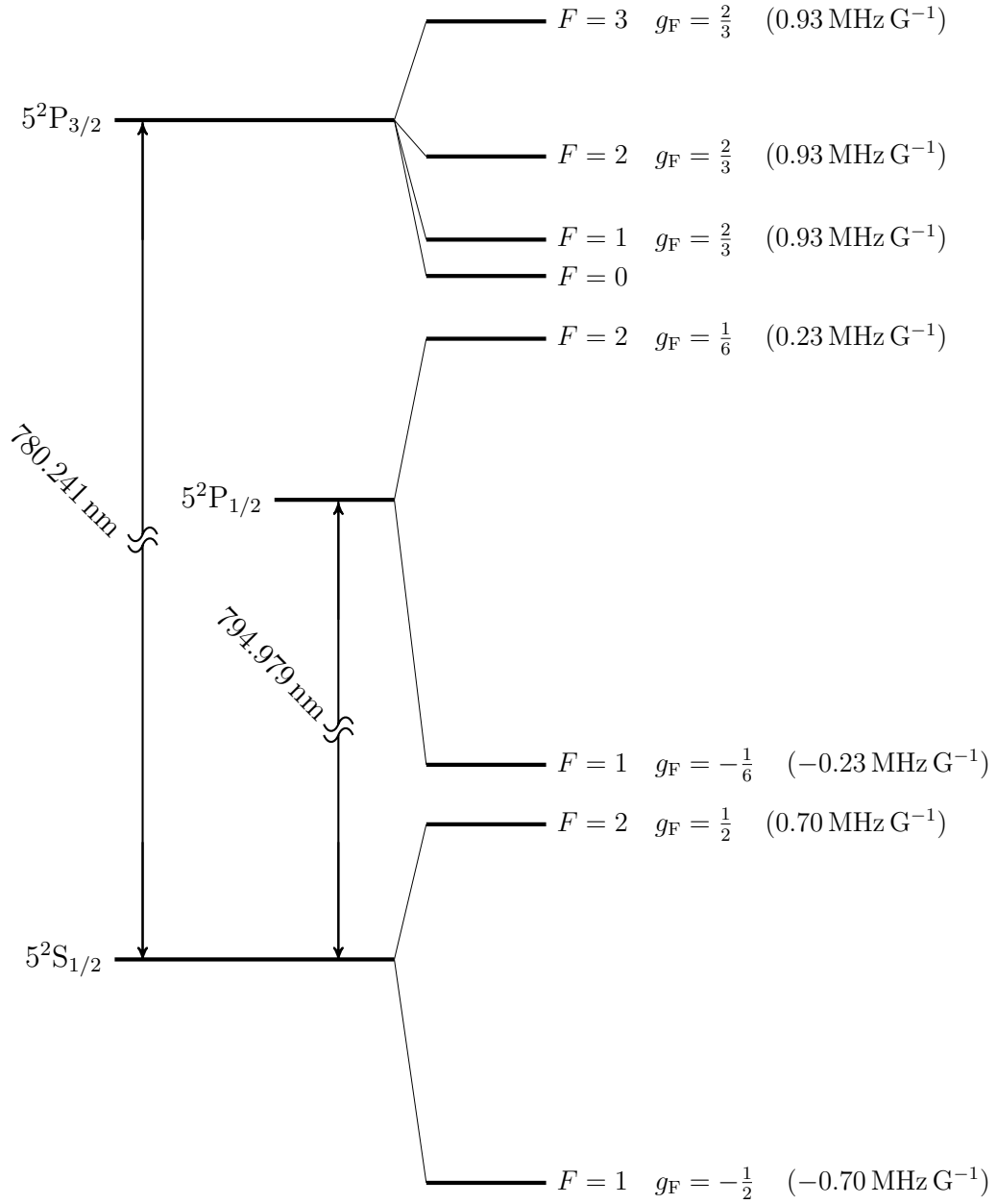


Figure 3.4.: ^{87}Rb hyperfine structure of the D1 and D2 line

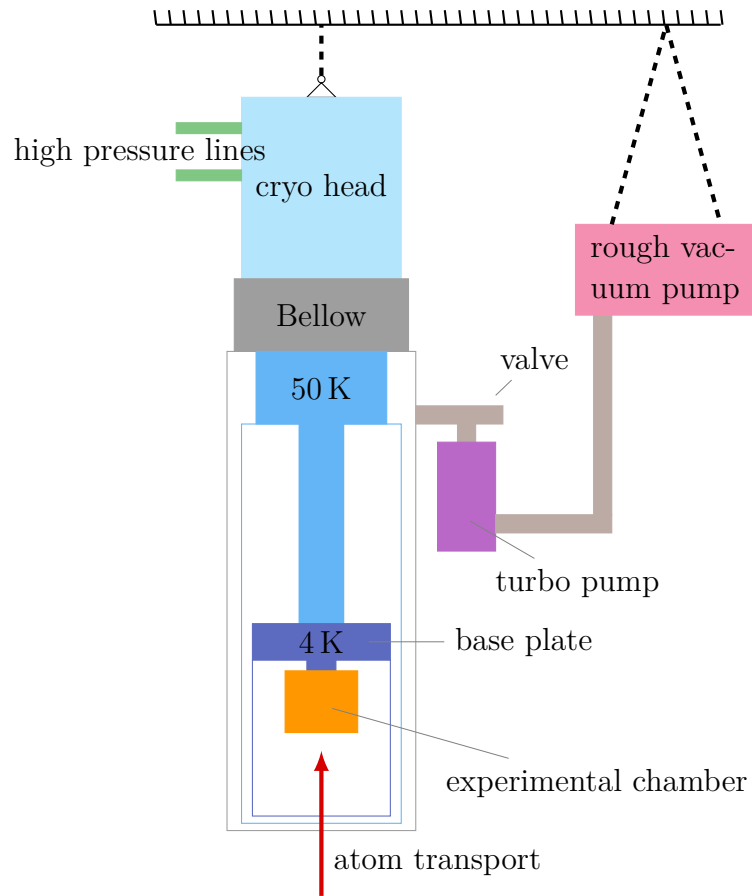


Figure 3.5.: Overview sketch of the cryogenic setup

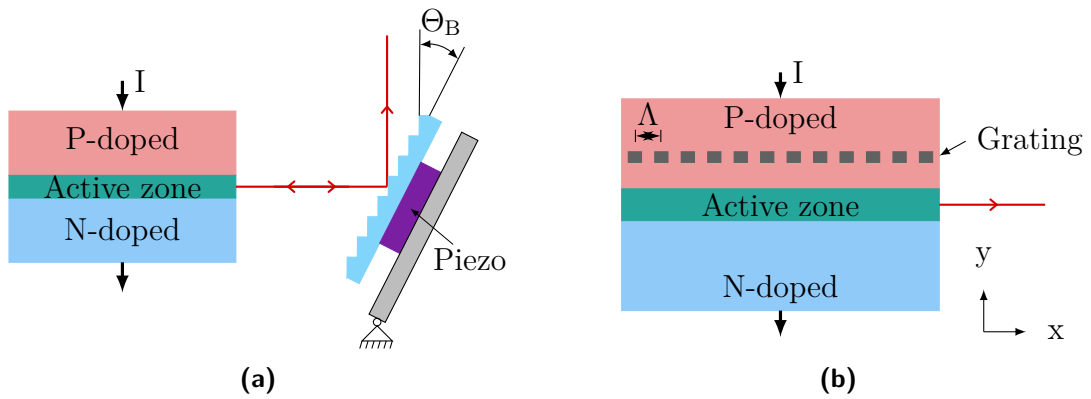


Figure 3.6.: semiconductor laser types: (a) ECDL; (b) DFB.

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fine adjustments directly in the code. If you are not already using it you should go 1
and check it out. 2

¹ **Todo list**

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¹ **List of Tables**

Acknowledgements

1

Thanks to ...

2

References

- 2 [1] Albert Einstein. “Quantentheorie des einatomigen idealen Gases (zweite Abhand-
- 3 lung)”. In: *Sitzungsberichte der Preussischen Akademie der Wissenschaften* 1
- 4 (1924), pp. 261–267.
- 5 [2] Albert Einstein. “Quantentheorie des einatomigen idealen Gases (erste Abhand-
- 6 lung)”. In: *Sitzungsberichte der Preussischen Akademie der Wissenschaften* 2
- 7 (1925), pp. 245–257.
- 8 [3] Louis V. de Broglie. “The wave nature of the electron”. In: *Nobel lectures, Physics*
- 9 *1922-1941* (1929), pp. 244–256.