

Submitted by
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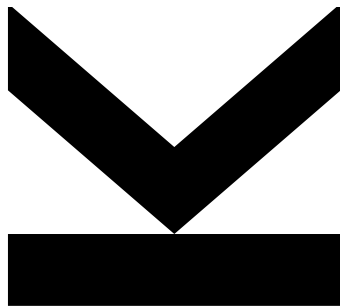
Submitted at
**Institute of Semicon-
ductor and Solid State
Physics**

Supervisor
**Prof. Dr. Armando
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DI Christian Schimpf

month year

Exciting and Resolving Quantum Dot Emission with Adiabatic Rapid Passage and Fabry Perot Interferometer



Master Thesis
to obtain the academic degree of
Diplom-Ingenieur
in the Master's Program
Technische Physik

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Abstract

This is a placeholder for the abstract. It summarizes the whole thesis to give a very short overview. Usually, this the abstract is written when the whole thesis text is finished.

Contents

Abstract	v
1 Introduction	1
2 Quantum Dot	3
2.1 Processing	3
2.2 Properties of our dots	3
2.3 Adiabatic Rapid Passage	3
3 Chirp	5
4 Scanning Fabry-Pérot Interferometer	7
4.1 Motivation	7
4.2 Theory	7
4.2.1 Gaussian Beam	7
4.2.2 Fabry-Pérot Interferometer	7
4.2.3 Simulation	8
4.3 Setup	9
4.4 Measurements and Results	9
Bibliography	13

List of Figures

4.1	8
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Todo list

1 Introduction

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2 Quantum Dot

2.1 Processing

2.2 Properties of our dots

Table 2.1: My caption

Quantum dot emission	Energy	Frequency
Center	(1.38 to 2.07) eV	$(3.33 \text{ to } 5.00) \times 10^{14} \text{ Hz}$
Spectral range	(100 to 500) μeV	$(24.20 \text{ to } 120.90) \times 10^9 \text{ Hz}$

2.3 Adiabatic Rapid Passage

3 Chirp

Hallo [1]

4 Scanning Fabry-Pérot Interferometer

4.1 Motivation

Resolve QD emission line.

4.2 Theory

4.2.1 Gaussian Beam

Dot-Spectra in far field is (TEM_{00}).

4.2.2 Fabry-Pérot Interferometer

The Fabry-Pérot interferometer is an optical resonator developed by Charles Fabry and Alfred Pérot. An incoming light beam will only be transmitted through the resonator consisting of two semi-transparent mirrors if it fulfils the resonance condition.[2]

But what then?

4.2.3 Simulation

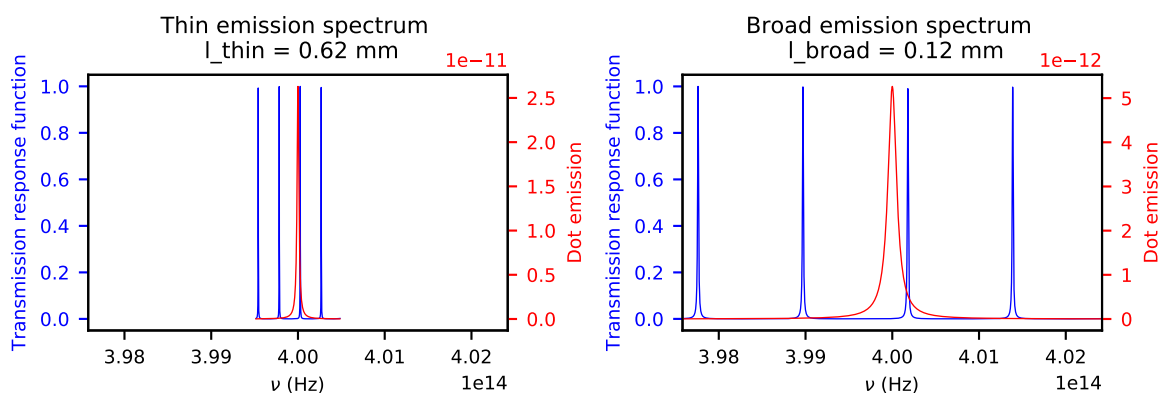


Figure 4.1:

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4.3 Setup

4.4 Measurements and Results

Appendix

Bibliography

- [1] Toshiyuki Hirayama and Mansoor Sheik-Bahae. “Real-time chirp diagnostic for ultrashort laser pulses.” In: *Optics Letters* 27.10 (May 15, 2002), p. 860. ISSN: 0146-9592, 1539-4794. DOI: 10.1364/OL.27.000860. URL: <https://www.osapublishing.org/abstract.cfm?URI=ol-27-10-860> (visited on 12/11/2018) (cit. on p. 5).
- [2] Timo Kaldewey et al. “Coherent and robust high-fidelity generation of a biexciton in a quantum dot by rapid adiabatic passage.” In: *Physical Review B* 95.16 (Apr. 10, 2017). ISSN: 2469-9950, 2469-9969. DOI: 10.1103/PhysRevB.95.161302. arXiv: 1701.01371. URL: <http://arxiv.org/abs/1701.01371> (visited on 12/11/2018) (cit. on p. 7).