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April 28, 2025

* A \LaTeX lover/hater

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Colophon

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The source code of this book is available at:

<https://github.com/fmarotta/kaobook>

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Publisher

First printed in May 2019 by

The harmony of the world is made manifest in Form and Number, and the heart and soul and all the poetry of Natural Philosophy are embodied in the concept of mathematical beauty.

– D'Arcy Wentworth Thompson

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Part I

**A FLEXIBLE PYTHON TOOL FOR
FOURIER-TRANSFORM NOISE
SPECTROSCOPY**

Part II

CHARACTERIZATION AND IMPROVEMENTS OF A MILLIKELVIN CONFOCAL MICROSCOPE

Introduction

5



Characterization of electrical performance

6

N^{OISE}

Characterization and improvements of the optical path

7



Vibration performance

8



Conclusion & outlook

9



Part III

**OPTICAL MEASUREMENTS OF
ELECTROSTATIC EXCITON TRAPS IN
SEMICONDUCTOR MEMBRANES**

Part IV

A FILTER-FUNCTION FORMALISM FOR UNITAL QUANTUM OPERATIONS

APPENDIX

Special Terms

P

PSD power spectral density. v