

PhD workbook

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Quantum physics grew up widely in the second half of the 20th century, many people contributed to pushing forward on many quantum technologies. I was highly unaware of the new achievements that quantum technologies can give us in the forthcoming years and this is a great surprise to me because I can now learn from some of the cutting-edge that are performing on the quantum scene.



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Report workbook

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Glossary

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Declaration

I hereby declare that the work presented in this thesis is entirely my own and that I did not use any other sources and references than the listed ones. I have marked all direct or indirect statements from other sources contained therein as quotations. Neither this work nor significant parts of it were part of another examination procedure. I have not published this work in whole or in part before. The electronic copy is consistent with all submitted copies.

Zaragoza (Aragón), December 2020

Abstract

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1

Introduction

This is an introduction. **this is bold** *this is italic text*

This is [Glossary item 1](#) and this is [Glossary item 2](#).

Citation here[1]. Footnote url here¹.

Another footnote simple ²

¹<http://google.com>

²this is a footnote

Another chapter

This is a chapter.

Second page.

Footnote url here with header³.

$$f = 28 \cdot \sqrt{(B_{DC} + (N_y - N_x) \cdot 0.86 \cdot 10^6 \cdot 4\pi \cdot 10^{-7}) \cdot (B_{DC} + (N_z - N_x) \cdot 0.86 \cdot 10^6) \cdot 4\pi \cdot 10^{-7}}$$

Equation 2.1: Theoretical Kittel equation expanded for a Permalloy thin-film for X-axis

2.1 Section here

This is a new section.

³<http://google.com>

Epilogue

This ia an epilogue.

Bibliography

- [1] Y. Li, T. Polakovic, Y.-L. Wang, J. Xu, S. Lendinez, Z. Zhang, J. Ding, T. Khaire, H. Saglam, R. Divan, J. Pearson, W.-K. Kwok, Z. Xiao, V. Novosad, A. Hoffmann, and W. Zhang, “Strong coupling between magnons and microwave photons in on-chip ferromagnet-superconductor thin-film devices.”, *Physical review letters*, vol. 123, p. 107701, Sept. 2019.

List of Publications

- [1] F. Luis, P. J. Alonso, O. Roubeau, V. Velasco, D. Zueco, D. Aguila, L. A. Barrios, and G. Aromí, “A dissymmetric $[\text{gd}_2]$ coordination molecular dimer hosting six addressable spin qubits”, 2020.
- [2] S. Savasta, O. D. Stefano, A. Settineri, D. Zueco, S. Hughes, and F. Nori, “Gauge principle and gauge invariance in quantum two-level systems”, 2020.