

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

This is justified text.

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-axe

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 $[gd_2]$ 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.