

The Catholic University of America

[TITLE OF THE THESIS]

A DISSERTATION

Submitted to the Faculty of

Department of Physics

School of Arts and Science

Of The Catholic University of America

In Partial Fulfillment of the Requirements

For the Degree

Doctor of Philosophy

By

[AUTHOR'S NAME]

Washington, D.C.

2021

[TITLE OF THE THESIS]

[AUTHOR'S NAME] [TITLE CONFERRED UPON GRADUATION]

Director: [ADVISOR'S NAME] [TITLE OF ADVISOR]

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo. Praesent feugiat sapien aliquet odio. Integer vitae justo. Aliquam vestibulum fringilla lorem. Sed neque lectus, consectetur at, consectetur sed, eleifend ac, lectus. Nulla facilisi. Pellentesque eget lectus. Proin eu metus. Sed porttitor. In hac habitasse platea dictumst. Suspendisse eu lectus. Ut mi mi, lacinia sit amet, placerat et, mollis vitae, dui. Sed ante tellus, tristique ut, iaculis eu, malesuada ac, dui. Mauris nibh leo, facilisis non, adipiscing quis, ultrices a, dui.

Morbi luctus, wisi viverra faucibus pretium, nibh est placerat odio, nec commodo wisi enim eget quam. Quisque libero justo, consectetur a, feugiat vitae, porttitor eu, libero. Suspendisse sed mauris vitae elit sollicitudin malesuada. Maecenas ultricies eros sit amet ante. Ut venenatis velit. Maecenas sed mi eget dui varius euismod. Phasellus aliquet volutpat odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae; Pellentesque sit amet pede ac sem eleifend consectetur. Nullam elementum, urna vel imperdiet sodales, elit ipsum pharetra ligula, ac pretium ante justo a nulla. Curabitur tristique arcu eu metus. Vestibulum lectus. Proin mauris. Proin eu nunc eu urna hendrerit faucibus. Aliquam auctor, pede consequat laoreet varius, eros tellus scelerisque quam, pellentesque hendrerit ipsum dolor sed augue. Nulla nec lacus.

Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetur odio sem sed wisi.

This dissertation by Luiz Fernando Guedes dos Santos fulfills the dissertation requirement for the doctoral degree in Physics approved by [FIRST COMMITTEE MEMBER], as Director, and by [SECOND COMMITTEE MEMBER], and [THIRD COMMITTEE MEMBER], and [FORTH COMMITTEE MEMBER], as Readers.

---

[FIRST COMMITTEE MEMBER], Director

---

[SECOND COMMITTEE MEMBER], Reader

---

[THIRD COMMITTEE MEMBER], Reader

---

[FORTH COMMITTEE MEMBER], Reader

## **DEDICATION**

[Optional Text]

*“Very powerful citation”*

[Author of the citation]

*“A inspirational citation”*

[Author of the inspirational citation]

## ACKNOWLEDGEMENTS

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

## TABLE OF CONTENTS

|                                 |      |
|---------------------------------|------|
| DEDICATION                      | iii  |
| ACKNOWLEDGEMENTS                | v    |
| LIST OF FIGURES                 | vii  |
| LIST OF TABLES                  | viii |
| <br>                            |      |
| CHAPTER 1      Introduction     | 1    |
| CHAPTER 2      A Second Chapter | 3    |
| CHAPTER 3      A Third Chapter  | 4    |
| CHAPTER 4      A Fourth Chapter | 5    |
| CHAPTER 5      Conclusion       | 6    |
| <br>                            |      |
| APPENDIX A    Chapter 1         | 8    |
| APPENDIX B    Chapter 2         | 9    |
| APPENDIX C    Chapter 3         | 10   |



**LIST OF FIGURES**

|     |                      |   |
|-----|----------------------|---|
| 1.1 | CUA Logo . . . . .   | 1 |
| A.1 | CUA Logo 2 . . . . . | 8 |

## LIST OF TABLES

|     |                              |   |
|-----|------------------------------|---|
| 2.1 | Very imporant table. . . . . | 3 |
|-----|------------------------------|---|

## CHAPTER 1

### Introduction

#### An Interesting Section

Great thoughts that further your argument. This includes lots of strong evidence presented throughout several paragraphs, each accompanied by necessary citations.

Here is a block quotation—a passage from a text you found insightful and wanted to share with others. Maybe it is from a journal article, website, or book. Irrespective, it should support the argument being made.<sup>1</sup>

Maybe a sentence or two that bring the argument and evidence together.(dos Santos *et al.*, 2020)

Check appendix 1



Figure 1.1: CUA Logo

---

1. A citation for the quoted material.

### **Another Insightful Section**

More ideas that really make this a great paper. Maybe a footnote or two.<sup>2</sup>

---

2. Some peripheral thoughts that belong in a note.

## CHAPTER 2

### A Second Chapter

#### An Interesting Section

Great thoughts that further your argument. This includes lots of strong evidence presented throughout several paragraphs, each accompanied by necessary citations.

Here is a block quotation—a passage from a text you found insightful and wanted to share with others. Maybe it is from a journal article, website, or book. Irrespective, it should support the argument being made.<sup>1</sup>

Check appendix 2 Maybe a sentence or two that bring the argument and evidence together.(dos Santos *et al.*, 2020)

Table 2.1. Very imporant table.

| AIA channel (Å) | Scaling unit [DN/s/pixel] |
|-----------------|---------------------------|
| 94              | 10                        |
| 131             | 80                        |
| 171             | 2000                      |
| 193             | 3000                      |
| 211             | 1000                      |
| 304             | 500                       |
| 335             | 80                        |

#### Another Insightful Section

More ideas that really make this a great paper. Maybe a footnote or two.<sup>2</sup>

---

1. A citation for the quoted material.

2. Some peripheral thoughts that belong in a note.

## CHAPTER 3

### A Third Chapter

#### An Interesting Section

Great thoughts that further your argument. This includes lots of strong evidence presented throughout several paragraphs, each accompanied by necessary citations.

Here is a block quotation—a passage from a text you found insightful and wanted to share with others. Maybe it is from a journal article, website, or book. Irrespective, it should support the argument being made.<sup>1</sup>

Check appendix 3

Maybe a sentence or two that bring the argument and evidence together.(dos Santos *et al.*, 2020)

#### Another Insightful Section

More ideas that really make this a great paper. Maybe a footnote or two.<sup>2</sup>

---

1. A citation for the quoted material.

2. Some peripheral thoughts that belong in a note.

## CHAPTER 4

### A Fourth Chapter

#### An Interesting Section

Great thoughts that further your argument. This includes lots of strong evidence presented throughout several paragraphs, each accompanied by necessary citations.

Here is a block quotation—a passage from a text you found insightful and wanted to share with others. Maybe it is from a journal article, website, or book. Irrespective, it should support the argument being made.<sup>1</sup>

Maybe a sentence or two that bring the argument and evidence together.(dos Santos *et al.*, 2020)

#### Another Insightful Section

More ideas that really make this a great paper. Maybe a footnote or two.<sup>2</sup>

---

1. A citation for the quoted material.

2. Some peripheral thoughts that belong in a note.

## CHAPTER 5

### Conclusion

#### An Interesting Section

Great thoughts that further your argument. This includes lots of strong evidence presented throughout several paragraphs, each accompanied by necessary citations.

Here is a block quotation—a passage from a text you found insightful and wanted to share with others. Maybe it is from a journal article, website, or book. Irrespective, it should support the argument being made.<sup>1</sup>

Maybe a sentence or two that bring the argument and evidence together.(dos Santos *et al.*, 2020)

#### Another Insightful Section

More ideas that really make this a great paper. Maybe a footnote or two.<sup>2</sup>

---

1. A citation for the quoted material.

2. Some peripheral thoughts that belong in a note.



## REFERENCES

dos Santos, L.F.G., Narock, A., Nieves-Chinchilla, T., Nuñez, M., Kirk, M.: 2020, Identifying Flux Rope Signatures Using a Deep Neural Network. *Sol. Phys.* **295**(10), 131. DOI. ADS.

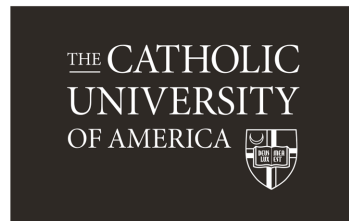
## APPENDIX A

### Chapter 1



#### 3-Color Reversed

The 3-color reversed logo should only be used on red or black brand colors and on imagery where the logo is clear and unobstructed.



#### 1-Color Reversed

The 1-color reversed logo should be used only on approved brand colors and on imagery where the logo is clear and unobstructed.

Figure A.1: CUA Logo 2

## APPENDIX B

### Chapter 2

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.

## APPENDIX C

### Chapter 3

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.