Fancy Title of Your Thesis

by

First Last (姓名)

**A dissertation submitted to The Johns Hopkins University
in conformity with the requirements for the degree of
Doctor of Philosophy**

Baltimore, Maryland

May, 2019

Abstract

This is your abstract.

Research Advisor: First1 Last1

Academic Advisor: First2 Last2

Thesis Committee

Primary Readers

First1 Last1
    Astronomer
    Space Telescope Science Institute

First2 Last2
    Assistant Professor
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Alternate Readers

First5 Last5
    Scientist
    Johns Hopkins University Applied Physics Laboratory

First6 Last6
    Associate Professor
    Department of Applied Mathematics & Statistics
    Johns Hopkins Whiting School of Engineering

Acknowledgments

Put your acknowledgements here.

Some mixed English and Chinese examples within pinyin:

Thank you my peers: Jane Doe, Zhāng Sān (张三), Lǐ Sì (李四), Wáng Wǔ (王五), and John Doe.

Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

1.1 Figure Examples

1.1.1 One Figure

Figure 1.1 shows Pluto's image captured by New Horizons.
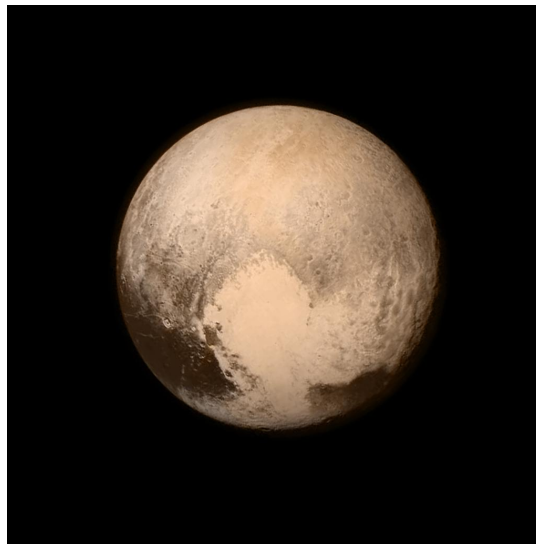

Figure 1.1: Long description of figure 1 (Pluto captured by New Horizons). Note: there is a short description which will show on your list of figures. Image taken from https://images-assets.nasa.gov/image/PIA19708/PIA19708~orig.jpg.

1.1.2 One Horizontal Figure

Figure 1.2 is an example of landscape image, which is Ultima Thule captured by New Horizons extended mission.

Figure 1.2: Long description of figure 1.2 (Ultima Thule captured by New Horizons). Note: there is a short description which will show on your list of figures. Note: in the \includegraphics command, use \linewidth instead of \textwidth to occupy almost the entire field of view. Image taken from https://solarsystem.nasa.gov/system/news_items/main_images/819_MU69_1600.jpg.

1.1.3 A Set of Subfigures

Figure 1.3 is an example of a set of subfigures. You can cite the panels individually: Figure 1.3a, Figure 1.3b, and Figure 1.3c.

(a) Caption 1.

(b) Caption 2.
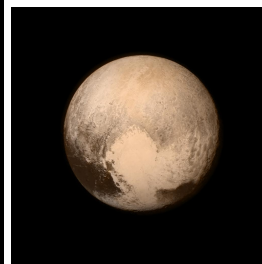
(c) Caption 3.

Figure 1.3: Long description of figure 1.3.

1.2 Citing Chapters

Chapter 2 has the citations in the Astrophysical Journal[1] (ApJ) style, it also shows how to use a long table. Chapter 3 has a normal table.

---

[1]https://iopscience.iop.org/journal/0004-637X

Chapter 2

Chapter with Citation in ApJ Style

Abstract   Put your abstract in.

2.1   Citation Examples

You can cite a reference using \citet{}, \citep{}, and \citealp{}. They will look like this:

Ren et al. (2018),

(Ren et al., 2018),

and Ren et al., 2018.

You can just copy the AAS bibtex entires from ADS[1], and paste them in the .bib file.

2.2   Equation and Table Examples

This is your section alpha.

---

[1]https://ui.adsabs.harvard.edu

2.2.1 Equation

This is an equation sample taken from Ren et al. (2018):

$$T_{\mathrm{NMF}} = D_{\mathrm{NMF}} + S_{\mathrm{NMF}}, \tag{2.1}$$

where the subscript $_{\mathrm{NMF}}$ means performing the NMF modeling result for the stellar signal (S) or disk signal (D) alone.

You can refer to the equation as Equation (2.1).

2.2.2 Long Table

Table 2.1 is part of a long table that was previous presented in an ApJ paper (Ren et al., 2018). The format was changed from the deluxetable style in ApJ.

Table 2.1: List of Symbols

Symbol	Expression	Dimension	Meaning
$\circ$	$(A \circ B)_{ij} = A_{ij}B_{ij}$		Element-wise (Hadamard) multiplication for matrices A and B of same dimension.
D		$1 \times N_{\mathrm{pix}}$	Flattened image of the astrophysical signal (i.e., no stellar information).
$\hat{D}$	$T - \hat{f}T_{\mathrm{NMF}}$	$1 \times N_{\mathrm{pix}}$	Reduced best image of the astrophysical signal (D), obtained from BFF procedure.
D_f	$T - fT_{\mathrm{NMF}}$	$1 \times N_{\mathrm{pix}}$	Reduced image of the astrophysical signal with scaling factor f.
D_{NMF}	$\omega^{(D)}H$	$1 \times N_{\mathrm{pix}}$	NMF model of the astrophysical signal (D).
$\delta(\cdot)$			The change of the $(\cdot)$ item after one iteration.

(continued)

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Table 2.1 – (continued)

Symbol	Expression	Dimension	Meaning
$F_{\text{disk}}/F_{\text{star}}$			Flux ratio between the disk and the star.
f			Scaling factor, where $0 < f < 1$.
$\hat{f}$			Optimum scaling factor obtained from the BFF procedure, corresponding with $\hat{D}$.
H, $H^{(k)}$, $H^{(k+1)}$	$[H_1^T, \cdots, H_n^T]^T$	$n \times N_{\text{pix}}$	NMF component matrix for the reference cube.
H_1, H_i, H_n		$1 \times N_{\text{pix}}$	The 1-st, i-th, and n-th NMF component for the reference cube (R).
$(\cdot)^{(k)}$, $(\cdot)^{(k+1)}$	superscript		Iteration step number.
$\mu_f^{(k)}$			The median of the pixels in D_f at iteration step k.
N_{pix}			Number of pixels in each image.
N_{ref}			Number of images in the reference cube (R).

The above table crosses different pages automatically. If you find a way to use the deluxetable directly, please do not use this format since it takes a few minutes to do the conversion.

2.3 Appendix

This is your appendix for this chapter.

References

Ren, B., L. Pueyo, G. B. Zhu, J. Debes, and G. Duchêne (2018). "Non-negative Matrix Factorization: Robust Extraction of Extended Structures". In: *The Astrophysical Journal* 852, 104, p. 104. DOI: 10.3847/1538-4357/aaa1f2. arXiv: 1712.10317 [astro-ph.IM].

Chapter 3

Another Chapter in *ApJ* Style

Note: if you want italic font in your chapter title, use \{} rather than \it{} to have a better formatting in the Table of Contents.

Abstract   This is your abstract.

3.1   Table example

Table 3.1 has been presented in Ren et al. (2017). It is not presented in Ren et al. (2018). I am citing two references just to show you that the Reference section for this table will have two entries.

In the .bib file, you do not have to arrange the entries by their citation order! And you can add more entries—they will **not** appear on the References section as long as you don't cite them.

Table 3.1: Summary of Public *HST*/STIS Observations as of Dec. 2016.

	Proposed Aperture Name	Number of Flat-Fielded Files
1	BAR10	116
2	**WEDGE A0.6**	**228**
3	**WEDGE A1.0**	**493**
4	WEDGE A1.8	86
5	WEDGE A2.0	39
6	WEDGE A2.5	1
7	WEDGE A2.8	5
8	WEDGE B1.0	37
9	WEDGE B1.8	8
10	WEDGE B2.0	9
11	WEDGE B2.5	116
12	WEDGE B2.8	5

References

Ren, B., L. Pueyo, M. D. Perrin, J. H. Debes, and É Choquet (2017). "Post-processing of the HST STIS coronagraphic observations". In: *Techniques and Instrumentation for Detection of Exoplanets VIII*. Vol. 10400. Proceedings of the SPIE, p. 1040021. DOI: 10.1117/12.2274163. URL: http://dx.doi.org/10.1117/12.2274163.

Ren, B., L. Pueyo, G. B. Zhu, J. Debes, and G. Duchêne (2018). "Non-negative Matrix Factorization: Robust Extraction of Extended Structures". In: *The Astrophysical Journal* 852, 104, p. 104. DOI: 10.3847/1538-4357/aaa1f2. arXiv: 1712.10317 [astro-ph.IM].

Chapter 4

Conclusion

4.1 Results

Blah blah blah. Blah blah blah. Blah blah blah.

4.2 Ongoing Work and Future Exploration

Tackling Some Exciting Problems   Blah blah blah.

Methodology: Blah blah blah.

Expected Results: Blah blah blah.

John Doe

Resumé title

Some quote

Born on June 26th, 2014 in Ultima Thule, Solar System.

Education

year–year **Degree**, *Institution*, City, *Grade*.
Description

year–year **Degree**, *Institution*, City, *Grade*.
Description

Master thesis

title *Title*

supervisors Supervisors

description Short thesis abstract

Experience

Vocational

year–year **Job title**, *Employer*, City.
General description no longer than 1–2 lines.
Detailed achievements:
- Achievement 1;
- Achievement 2, with sub-achievements:
  - Sub-achievement (a);
  - Sub-achievement (b), with sub-sub-achievements (don't do this!);
    - Sub-sub-achievement i;
    - Sub-sub-achievement ii;
    - Sub-sub-achievement iii;
  - Sub-achievement (c);
- Achievement 3.

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year–year	**Job title**, *Employer*, City.
	Description line 1
	Description line 2
	Miscellaneous
year–year	**Job title**, *Employer*, City.
	Description

Languages

Language 1	**Skill level**	*Comment*
Language 2	**Skill level**	*Comment*
Language 3	**Skill level**	*Comment*

Computer skills

category 1	XXX, YYY, ZZZ	category 4	XXX, YYY, ZZZ
category 2	XXX, YYY, ZZZ	category 5	XXX, YYY, ZZZ
category 3	XXX, YYY, ZZZ	category 6	XXX, YYY, ZZZ

Interests

hobby 1	Description
hobby 2	Description
hobby 3	Description

Extra 1

- Item 1
- Item 2
- Item 3. This item is particularly long and therefore normally spans over several lines. Did you notice the indentation when the line wraps?

Extra 2

- Item 1
- Item 2
- Item 3
- Item 4
- Item 5[**?**]
- Item 6. Like item 3 in the single column list before, this item is particularly long to wrap over several lines.

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jdoe • *additional information* | *Page 2 of 5*

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References

Category 1
◦ Person 1
◦ Person 2
◦ Person 3

Category 2
Amongst others:
◦ Person 1, and
◦ Person 2
(more upon request)

All the rest & some more
That person, and **those** also (all available upon request).

Publications of the Template Creator

1st Authored Journals

[1] **B. Ren**, R. Dong, T. M. Esposito, L. Pueyo, J. H. Debes, C. A. Poteet, É. Choquet, M. Benisty, E. Chiang, C. A. Grady, D. C. Hines, G. Schneider, and R. Soummer. A Decade of MWC 758 Disk Images: Where Are the Spiral-arm-driving Planets? *The Astrophysical Journal Letters*, 857:L9, April 2018.

[2] **B. Ren**, L. Pueyo, G. B. Zhu, J. Debes, and G. Duchêne. Non-negative Matrix Factorization: Robust Extraction of Extended Structures. *The Astrophysical Journal*, 852:104, January 2018.

[3] **B. Ren**, T. Fang, and D. A. Buote. X-Ray Absorption by the Warm-hot Intergalactic Medium in the Hercules Supercluster. *The Astrophysical Journal Letters*, 782:L6, February 2014.

2nd Authored Journals

[1] Y. Mo, **B. Ren**, W. Yang, and J. Shuai. The 3-dimensional cellular automata for HIV infection. *Physica A Statistical Mechanics and its Applications*, 399:31–39, April 2014.

n-th Authored Journals

[1] T. M. Esposito, G. Duchêne, P. Kalas, M. Rice, É. Choquet, **B. Ren**, M. D. Perrin, C. H. Chen, P. Arriaga, E. Chiang, E. L. Nielsen, J. R. Graham, J. J. Wang, R. J. De Rosa, K. B. Follette, S. M. Ammons, M. Ansdell, V. P. Bailey, T. Barman, J. Sebastián Bruzzone, J. Bulger, J. Chilcote, T. Cotten, R. Doyon, M. P. Fitzgerald, S. J. Goodsell, A. Z. Greenbaum, P. Hibon, L.-W. Hung, P. Ingraham, Q. Konopacky, J. E. Larkin, B. Macintosh, J. Maire, F. Marchis, C. Marois, J. Mazoyer, S. Metchev, M. A. Millar-Blanchaer, R. Oppenheimer, D. Palmer, J. Patience, L. Poyneer, L. Pueyo, A. Rajan, J. Rameau, F. T. Rantakyrö, D. Ryan, D. Savransky, A. C. Schneider, A. Sivaramakrishnan, I. Song, R. Soummer, S. Thomas, J. K. Wallace, K. Ward-Duong, S. Wiktorowicz, and S. Wolff. Direct Imaging of the HD 35841 Debris Disk: A Polarized Dust Ring from Gemini Planet Imager and an Outer Halo from HST/STIS. *The Astronomical Journal*, 156:47, August 2018.

[2] É. Choquet, G. Bryden, M. D. Perrin, R. Soummer, J.-C. Augereau, C. H. Chen, J. H. Debes, E. Gofas-Salas, J. B. Hagan, D. C. Hines, D. Mawet, F. Morales, L. Pueyo, A. Rajan, **B. Ren**, G. Schneider, C. C. Stark, and S. Wolff. HD 104860

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and HD 192758: Two Debris Disks Newly Imaged in Scattered Light with the Hubble Space Telescope. *The Astrophysical Journal*, 854:53, February 2018.

Conference Proceedings

[1] **B. Ren**, L. Pueyo, M. D. Perrin, J. H. Debes, and É. Choquet. Post-processing of the HST STIS coronagraphic observations. In *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, volume 10400 of *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, page 1040021, September 2017.

Company Recruitment team
Company, Inc.
123 somestreet
some city

January 01, 1984

Dear Sir or Madam,

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis ullamcorper neque sit amet lectus facilisis sed luctus nisl iaculis. Vivamus at neque arcu, sed tempor quam. Curabitur pharetra tincidunt tincidunt. Morbi volutpat feugiat mauris, quis tempor neque vehicula volutpat. Duis tristique justo vel massa fermentum accumsan. Mauris ante elit, feugiat vestibulum tempor eget, eleifend ac ipsum. Donec scelerisque lobortis ipsum eu vestibulum. Pellentesque vel massa at felis accumsan rhoncus.

Suspendisse commodo, massa eu congue tincidunt, elit mauris pellentesque orci, cursus tempor odio nisl euismod augue. Aliquam adipiscing nibh ut odio sodales et pulvinar tortor laoreet. Mauris a accumsan ligula. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos. Suspendisse vulputate sem vehicula ipsum varius nec tempus dui dapibus. Phasellus et est urna, ut auctor erat. Sed tincidunt odio id odio aliquam mattis. Donec sapien nulla, feugiat eget adipiscing sit amet, lacinia ut dolor. Phasellus tincidunt, leo a fringilla consectetur, felis diam aliquam urna, vitae aliquet lectus orci nec velit. Vivamus dapibus varius blandit.

Duis sit amet magna ante, at sodales diam. Aenean consectetur porta risus et sagittis. Ut interdum, enim varius pellentesque tincidunt, magna libero sodales tortor, ut fermentum nunc metus a ante. Vivamus odio leo, tincidunt eu luctus ut, sollicitudin sit amet metus. Nunc sed orci lectus. Ut sodales magna sed velit volutpat sit amet pulvinar diam venenatis.

Albert Einstein discovered that $e = mc^2$ in 1905.

$$e = \lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n$$

Yours faithfully,

John Doe

Attached: curriculum vitæ

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