DLR

My Thesis Paper Title

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Declaration of Authorship

I hereby declare that this thesis, and the work presented in it are my own and has been generated by me as the result of my own original research. I confirm that:

1. Where I have consulted the published work of others, this is always clearly attributed.

2. Where I have quoted from the work of others, the source is always given. Except for such quotations, this thesis is entirely my own work.

3. I have acknowledged all main sources of help.

4. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Hannover, December 7, 2020
Location and Date   Signature

Contents

1 Chapter 1

This is a template you can use for your thesis. In the following some examples will be given how to use the template features.

1.1 Some Section

This is a section with some text.

1.2 Lists

This is a list:

- First item

- Second item

- Third item

1.3 Images

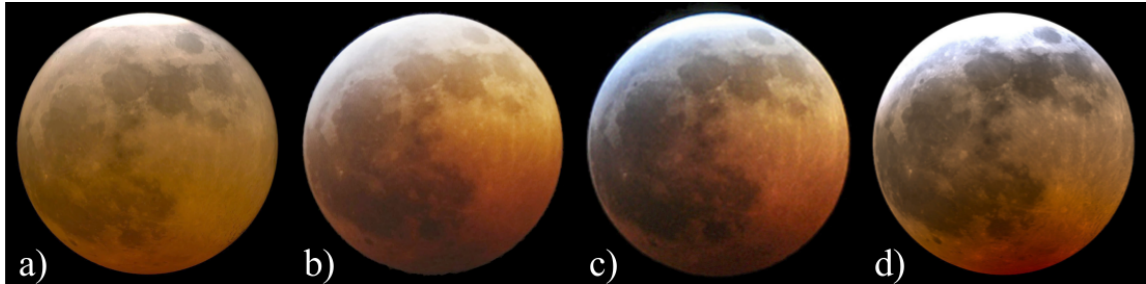### 1.3.1 Simple Image

This is an image:

Figure 1.1: This is the image caption. The image is from Limberger et al. [1].

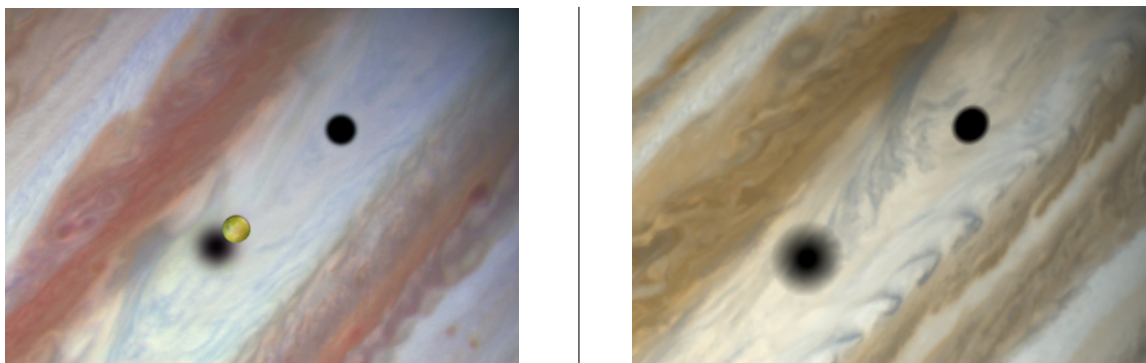### 1.3.2 Image Comparison

Figure 1.2: Here you can see two images next to another for comparison.

1.4 Citations and References

This is a citation: Limberger et al. [1].

This is a reference to the Appendix A.

This is a reference to an image 1.1.

Here are some more citations for example purposes at the end of the paper:

- Inproceedings [2]

- Article [3]

- Website [4]

- Tech Report [5]

- Master Thesis [6]

- Book [7]

2 Chapter 2

2.1 Formulas

This is a text that describes a formula. This formula is for calculating the brightness of light for a single point that is illuminated by the sun and partially occluded by a moon. This is done by taking the solid angle of the Sun Ω_{sun} subtracting the solid angle of the occluding moon Ω_{occ} and normalize the result. To the right we have a table that describes all the symbols that appear on this page, so people can much more easily see what symbol has which meaning without having to reread the text everytime they want to use the formula.

Symbols	
I	relative brightness
Ω_{sun}	solid angle of the sun
Ω_{occ}	solid angle of intersection

$$I = \frac{\Omega_{sun} - \Omega_{occ}}{\Omega_{sun}}. \tag{2.1}$$

2.2 Units in Equations

$$\frac{6371\,\text{km} * 149\,600\,000\,\text{km}}{695\,510\,\text{km} - 6371\,\text{km}} = 1\,383\,000\,\text{km}. \tag{2.2}$$

2.3 Code Blocks

This templated uses minted for formatting code. It is required to install the python package Pygments. You can do this with the following command: pip install Pygments

2.3.1 Simple Code Block

Here we can see a code block. The second argument specifies the language for text highlighting.

```
1  // Get the intensity of the eclipse caused by the occluding body for our fragment.
2  float eclipseLight = calcEclipse(occludingBody, fragPos);
3
4  // Get the color of the fragment from the bodies texture.
5  outputColor = texture(/*...*/);
6
7  // Reduce the brightness of the fragment according to the intensity of the eclipse.
8  outputColor = outputColor * eclipseLight;
```

2.3.2 Imported Code Block from File

The following line imports code from a text file. The first argument is the language for highlighting purposes.

```
1  float areaOfSphericalCapIntersection(float radiusA, float radiusB, float centerDist) {
2    // No intersection
3    if (centerDist >= radiusA + radiusB) return 0.0;
4
5    float minRad = min(radiusA, radiusB);
6
7    // One cap fully inside the other
8    if (minRad <= max(radiusA, radiusB) - centerDist)
9      return TWO_PI_F - (TWO_PI_F * cos(minRad));
10
11   // Precompute sines and cosines once for reuse.
12   float cosD = cos(centerDist);
13   float sinD = sin(centerDist);
14
15   float cosA = cos(radiusA);
16   float sinA = sin(radiusA);
17
18   float cosB = cos(radiusB);
19   float sinB = sin(radiusB);
20
21   float firstTerm = acos(clamp((cosD - cosA * cosB) / (sinA * sinB), -1.0, 1.0));
22   float secondTerm = acos(clamp((cosB - cosD * cosA) / (sinD * sinA), -1.0, 1.0)) * cosA;
23   float thirdTerm = acos(clamp((cosA - cosD * cosB) / (sinD * sinB), -1.0, 1.0)) * cosB;
24
25   return 2.0 * (-firstTerm - secondTerm - thirdTerm + PI_F);
26 }
```

2.3.3 Inline Code

This is inlined code: `float calcEclipse(vec4 occludingBody, vec3 fragmentPosition)`, where the first argument is the language.

2.4 Tables

This is a table:

Body	Semi-major Axis	Observer Placement	Max. Abs. Error
Mercury	0.39 AU	surface	0.0008
		500,000km	0.0000
Venus	0.72 AU	surface	0.0004
		500,000km	0.0000
Earth	1.00 AU	surface	0.0003
		Moon	0.0000
Mars	1.52 AU	surface	0.0002
		Phobos	0.0000
		Deimos	0.0000
Jupiter	5.20 AU	surface	0.0000
		Io	0.0000
		Callisto	0.0000

Table 2.1: This is the table caption.

A Appendix

This is the appendix. You can put all the stuff you like here.

A.1 Appendix Sections

The enumeration for the appendix is different.

Bibliography

[1] Limberger, D., J. Engel, and J. Döllner: *Single-pass rendering of day and night sky phenomena*. pp. 55–62, 11 2012. `https://pdfs.semanticscholar.org/fce4/4229921fcb850540a636bd28b33e30b18c3f.pdf`.

[2] Yapo, T. C. and B. Cutler: *Rendering lunar eclipses*. In *Proceedings of Graphics Interface 2009*, GI '09, pp. 63–69, Toronto, Ont., Canada, Canada, 2009. Canadian Information Processing Society, ISBN 978-1-56881-470-4. `https://www.cs.rpi.edu/~cutler/publications/yapo_gi09.pdf`.

[3] Williams, L.: *Casting curved shadows on curved surfaces*. SIGGRAPH Comput. Graph., 12(3):270–274, Aug. 1978, ISSN 0097-8930. `http://doi.acm.org/10.1145/965139.807402`.

[4] Celestia Development Team: *Celestia - real-time 3d visualization of space*. `https://celestia.space/`, Accessed: 2019-08-20.

[5] NASA: *U.s. standard atmosphere*. Techn. rep., NASA, NOAA, USAF, Washington, D.C., October 1976. `https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19770009539.pdf`.

[6] Fischer, T.: *Comparison of gpgpu frameworks related to game development*, September 2018. `https://drive.google.com/file/d/1zX-Etv1JVO_i-J84vgr-hjXYKyGIQQgM/view`.

[7] Bohren, C. F. and D. R. Huffman: *Absorption and Scattering of Light by Small Particles*. Wiley-VCH, 1998, ISBN 9780471293408.