Marp for my slide decks

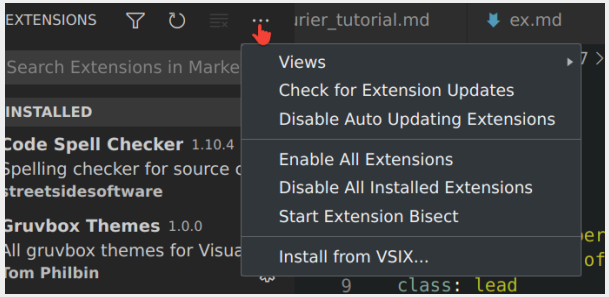
Australian National University

Prof François Rigaut
Research School of Astronomy & Astrophysics
The Australian National University

Installation

Marp is a standalone software, written in javascript, css. It comes with a command line package, **Mark-CLI**, and an extension for vscode, originally dubbed **Marp for vscode**. They are independent and provide similar, if not exactly identical capability, which are discussed in the next slides.

- Surprisingly, the vscode extension does not appear (at least for me) when searching the extension repository from within vscode. To install, download the `marp-team.marp-vscode-0.17.3.vsix` from the vsix web server and install from the interface (see right).



- The Mark-CLI package can be installed from the AUR:

```
[frigaut@archbox test-marp]$ pacman -Qs marp
local/marp-cli-bin 0.23.3-1
    A CLI interface for Marp and Marpit based converters
```

Resources

Lots of them. It's a bit of a mess actually, as they are transitioning to a new marp.

- Main Marp page
- Marp for vscode
- marp-cli

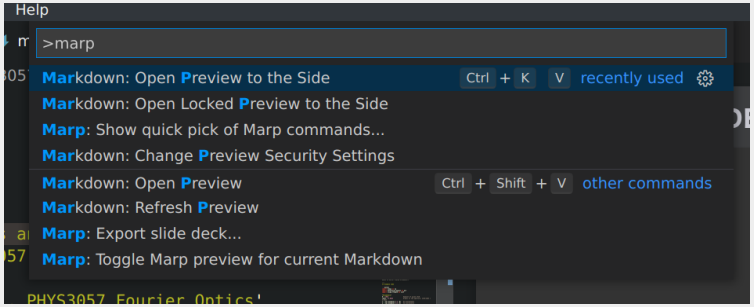
For developpers:

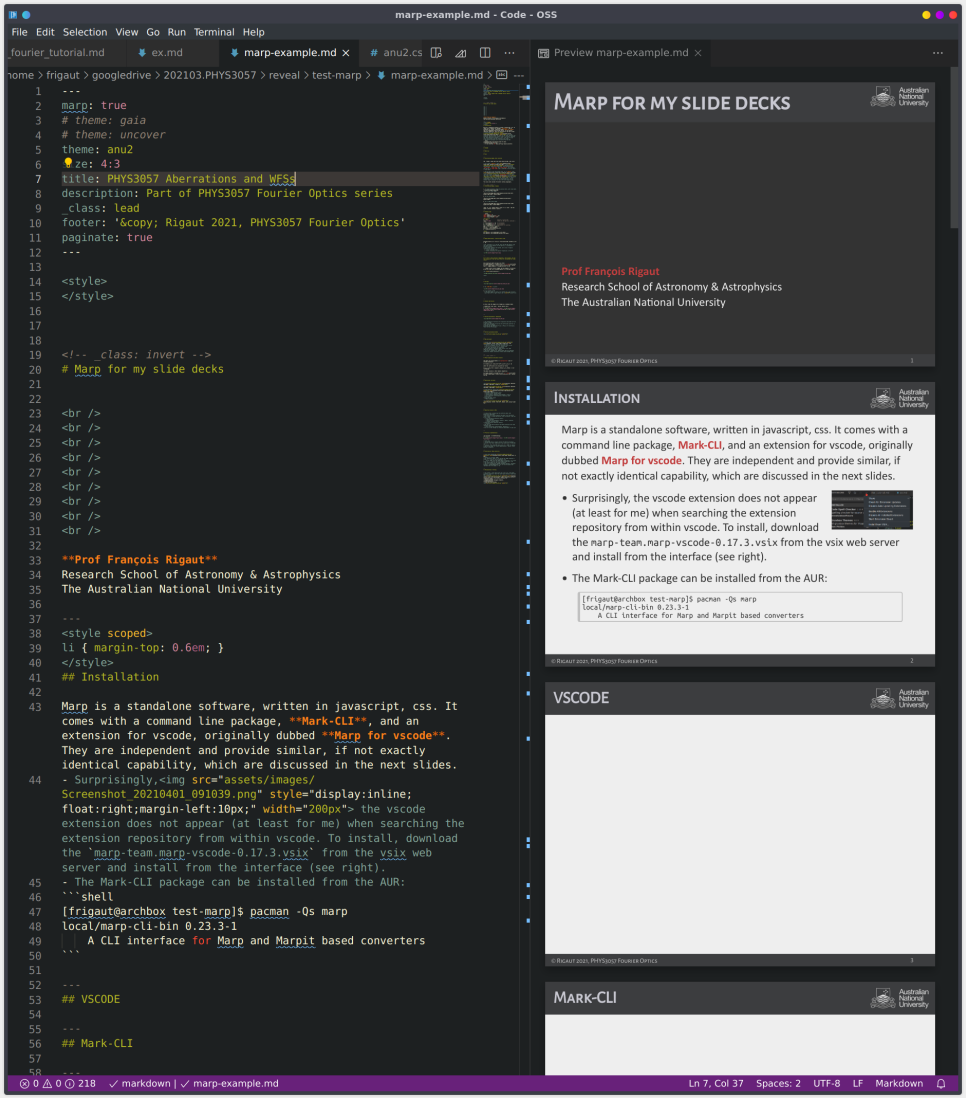
- marp-core
- marpit

VSCODE

As for other vscode or atom package, what they do is translate the markdown to html, using javascript. There is a local server that display the resulting HTML (see right).

There is also an export feature, accessible from the menu:





`marp` is a command line utility. Its function is essentially to process the markdown, generate the slides, and export in various formats: html, pdf, pptx, png, etc. The most useful commands are:

- Generate a html from the md file (for a pdf just add `--pdf`)

```
marp --allow-local-files --theme-set assets/css/ --html marp-example.md
```

(note that I have all css in `assets/css`)

- Start a server , browse the md files and generate the slides:

```
marp --html --allow-local-files --bespoke.progress --server .
```

You can connect to this server using `http://localhost:8080/`.
The server monitors changes to the md files and refresh the html instantly when that happens.

I have tuned anu.css, a css file to mimic the style I have perfected along the years, used in this very slide deck.
The Markdown looks like this:

```
---
YAML
---
A new slide is as follow:
---
## CSS & Markdown

I have tuned anu.css, a css file to mimic the style I have perfected
along the years, used in this very slide deck.

The Markdown looks like this:
etc etc
```

- `---` is a separator between slides
- All regular MD applies.

This slide deck (`marp-example.md`) can be taken as a start for new presentations. Illustration of image positioning, equations, etc follows.

Front Matter

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The current file YAML looks like this:

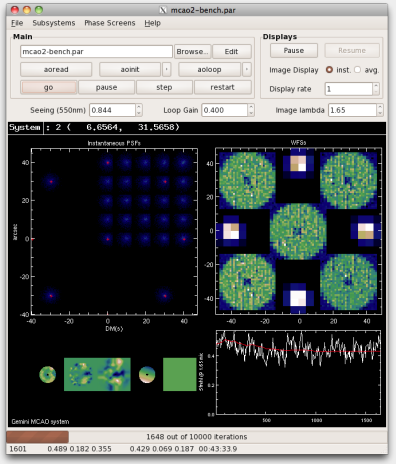
```yaml
---
marp: true # basic, otherwise marp doesn't interpret
theme: anu # my theme. anu.css in this directory
size: 4:3  # 4:3 slide - gotta love it
title: PHYS3057 Aberrations and WFSs
description: Part of PHYS3057 Fourier Optics series
_class: lead
footer: '&copy; Rigaut 2021, PHYS3057 Fourier Optics' # will be displayed in footer.
paginate: true
---
```

There is a number of subtleties for the CSS. In vscode, every cs file has to be declared in the settings. For marp-cli, at the command line. Also, remember that marpit theme css requires `/* @theme meta */`. The same applies for the syntax highlighting css file (which I include in the main anu.css). Last, if changing the syntax css, the background in this file has to be manually copied into the `pre, code and pre code` css background values.

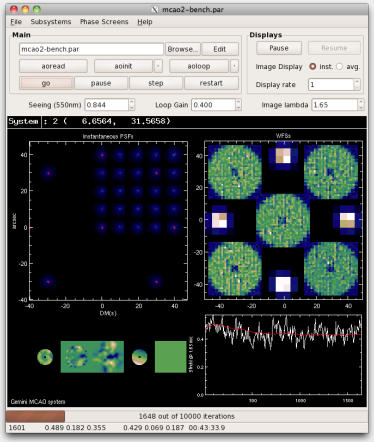
Positioning images, Best solution

The `</span>` plays well even with other MD code, like lists:

- For an easy (**here**) positioning, non-absolute, `there are essentially` three possibilities: `float:right`, `float:left` and `inline-block`. For instance, the yao gui is `float:right` and is inserted in the text where it says above.



- Then we have a left positioned float, as in **here**. And finally, we have the *inline-block*, as this mavis logo image MAVIS which is displayed really within the text flowing with it. Lorem ipsum dolor sit amet, consectetur adipiscing elit.



This also works outside of bullets (normal paragraphs).

Positioning images, Summary

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1. To simply include an image to position here, with clear:both;
   `![](assets/images/image.png)`
2. For a left float image:

```
<img src="im.png" style="display:inline;float:left;margin-right:15px;" width="190px"
```

3. For an inline image:

```
<img src="im.png" style="display:inline-block;" width="110px">
```

4. For a right float image:

```
<img src="im.png" style="display:inline;float:right;margin-left:10px;" width="200px"
```

(Also, no `<cr>` before that or else it's a `clear`. And the width is better stated in pixels.)

Example Code

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This is *pre code* CSS python code:

```
import numpy as np
import matplotlib.pyplot as plt
import scipy.fftpack as sciF

"Parameters"
N = 1024                    #amount of pixels NxN
radii = 0.0625              #radii of the aperture: 2*64/1024 = 0.0625
x = np.linspace(-1,1, N)    #x-coordinates
y = np.linspace(-1,1, N)    #y-coordinates
X,Y = np.meshgrid(x,y)      #Coordinates for plotting
aper = ((X**2+Y**2) < radii**2)
Psi_fft   = sciF.fft2(aper)
Psi_shift = sciF.fftshift(Psi_fft)
H = np.abs(Psi_shift)**2

"Plots"
plt.figure(1); plt.imshow(aper); plt.show()
plt.figure(2); plt.imshow(np.sqrt(H)); plt.show()
```

YAO GUI

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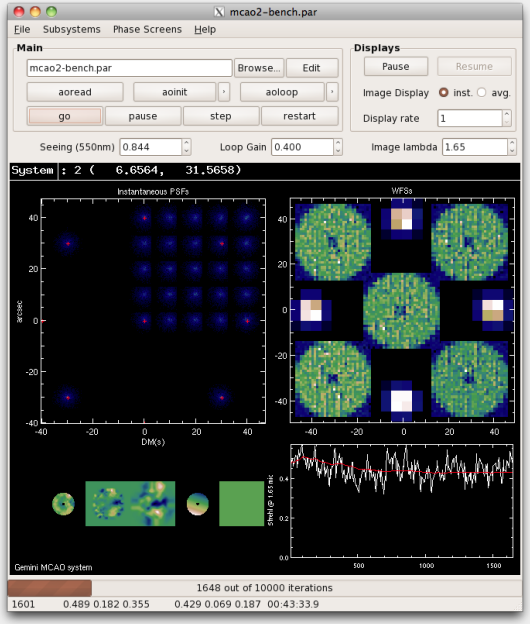
- the **YAO GUI** is great!



- It is written in GTK
  - The above image is inline. I'm looking for a way to easily code float left or right (Found! see slide 4)

Phase expansion and phase variance

The phase can be described as a *superposition* (sum) of Zernike polynomials

$$\varphi(x,y,t)\sum_{i=1}^{\infty}a_i(t)Z_i(x,y)$$

where the coefficients are calculated as follow:

$$a_i = \int_S W(r)\varphi(r,\theta)Z_i(r,\theta)\; r\; dr\; d\theta$$

The phase variance is then readily computed as:

$$\sigma_\varphi^2 =< \varphi^2(x,y,t) >_t = \sum_{i=1}^{\infty} a_i^2(t) \text{ given } \iint_S Z_i(x,y,)Z_j(x,y)dS = \delta_{ij}$$