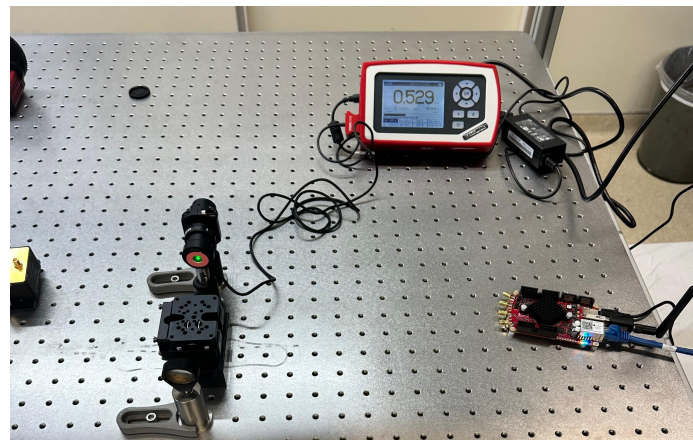
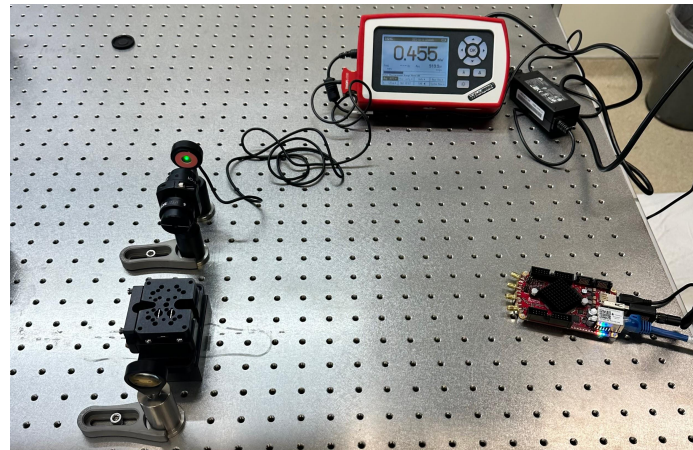
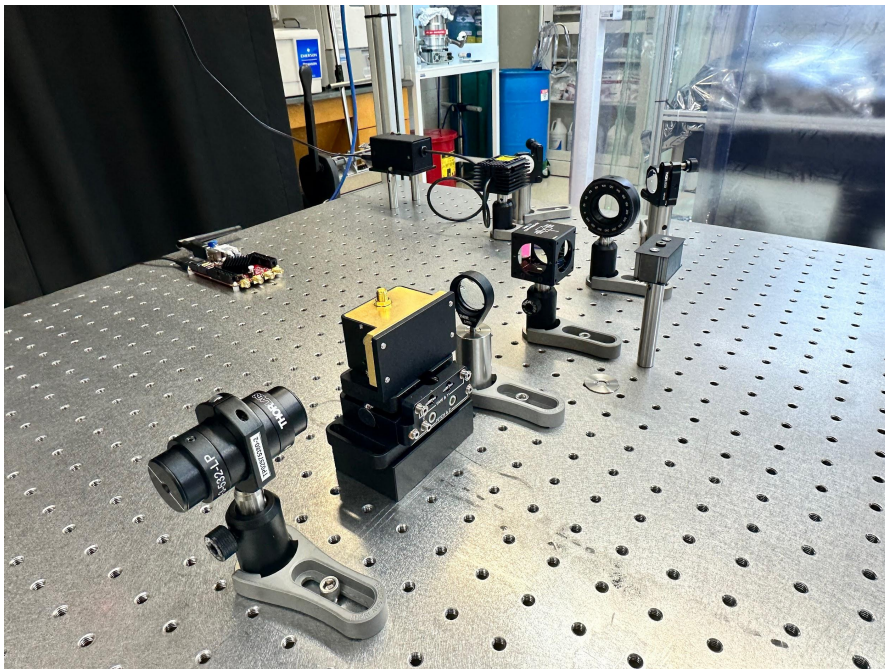


Visible Light Cavity Update

Peter Carney

10/16 - 10/23

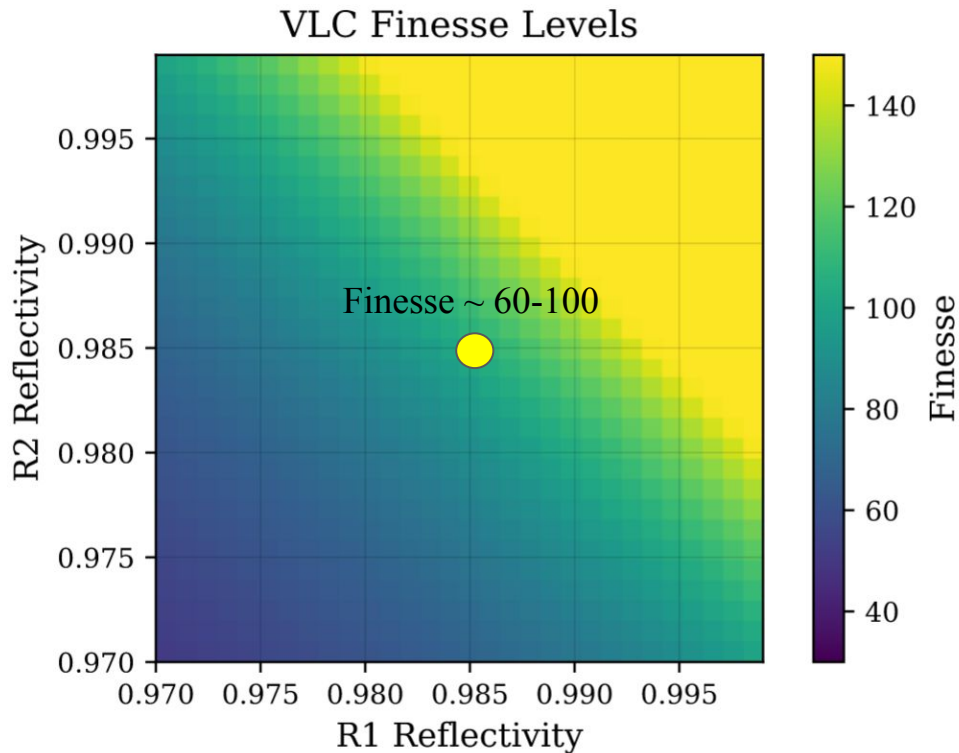
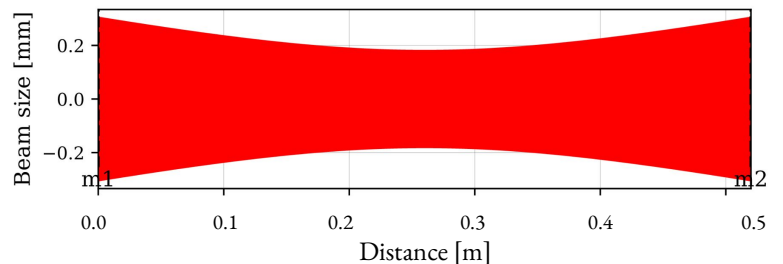
Current Configuration



Maximum Circulating Power

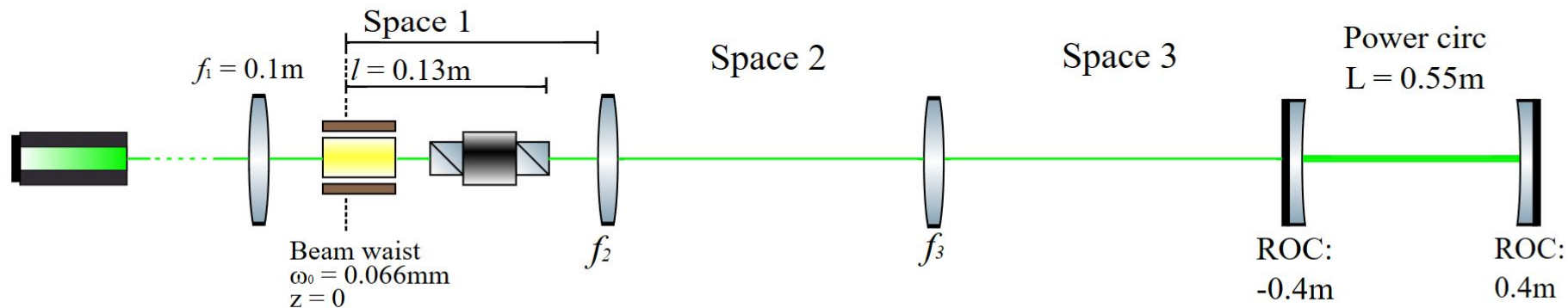
If we just model the cavity with the known parameters, for 1W, the maximum circulating power is:

65.67W



Mode Matching Telescope Layout

Input q parameter: $0 + 2.57 \cdot 10^{-5}i$



Three Mode Matching

Options: Option 1

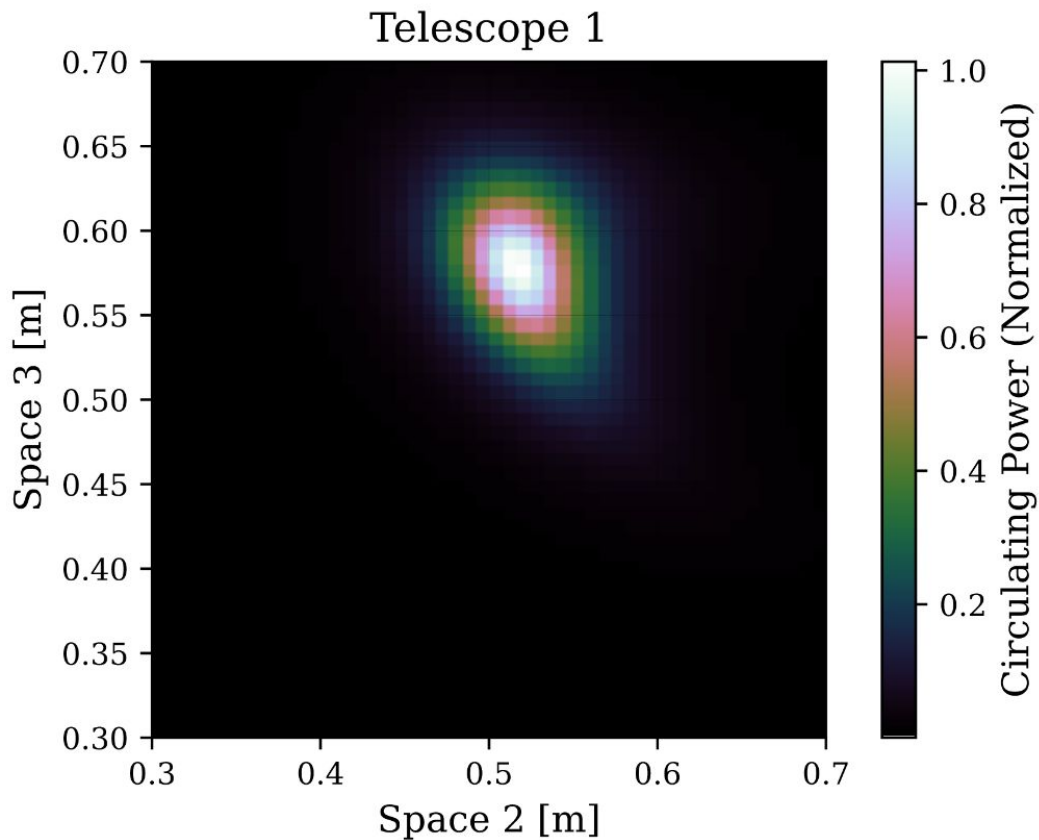
$$f_1 = 0.25\text{m}$$

$$f_2 = 0.5\text{m}$$

$$\text{Space 1} = 0.18\text{m}$$

$$\text{Space 2} = 0.525\text{m}$$

$$\text{Space 3} = 0.57\text{m}$$



Option 2

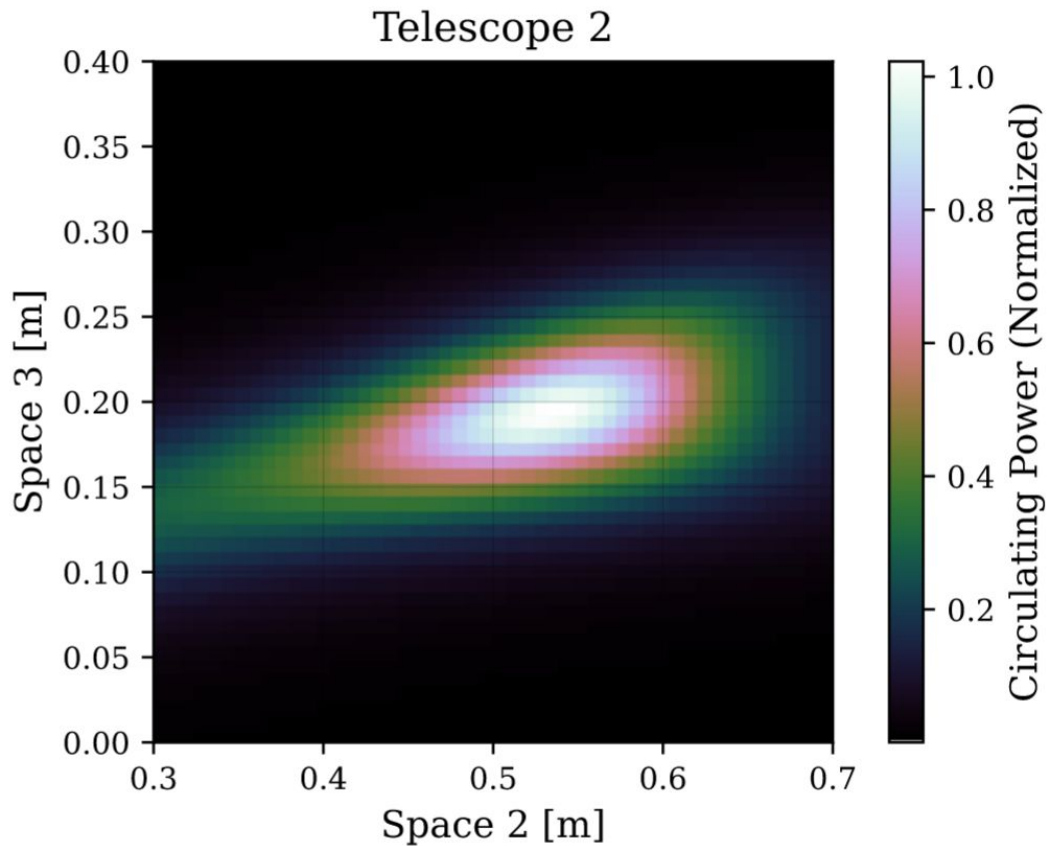
$$f_1 = 0.15\text{m}$$

$$f_2 = 0.4\text{m}$$

$$\text{Space 1} = 0.14\text{m}$$

$$\text{Space 2} = 0.53\text{m}$$

$$\text{Space 3} = 0.18\text{m}$$



Option 3

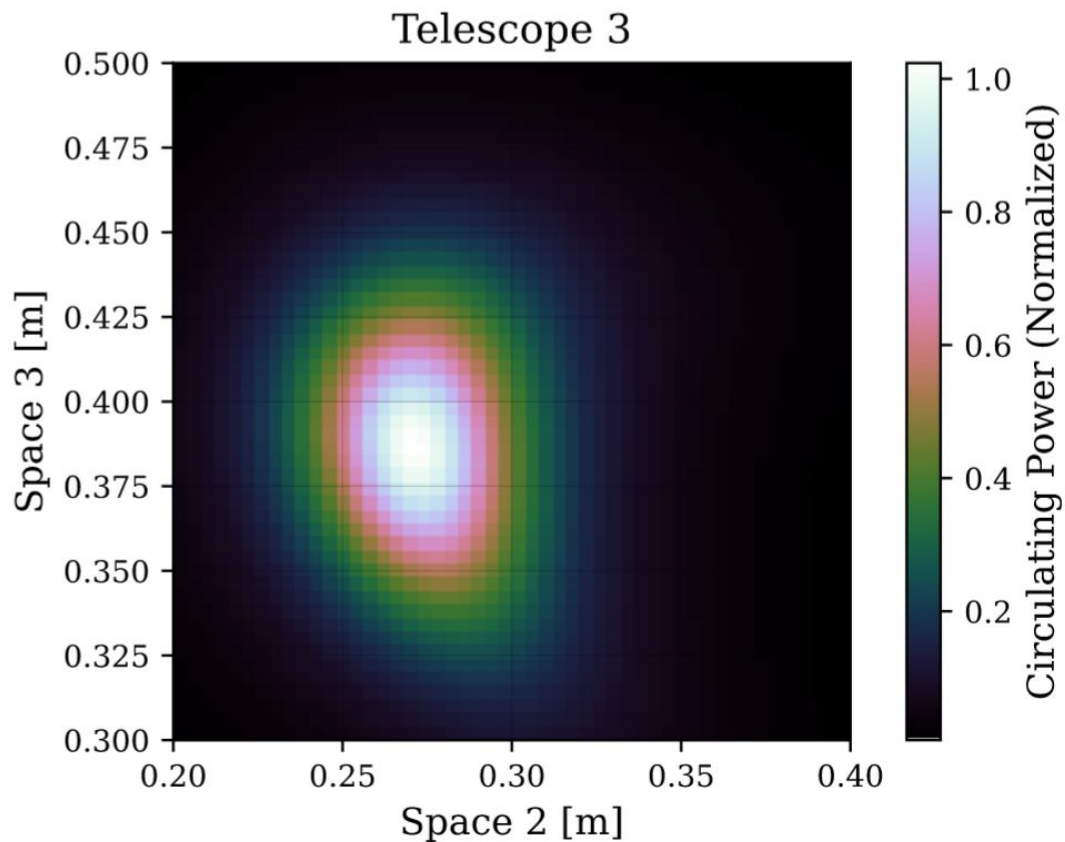
$$f_1 = 0.25\text{m}$$

$$f_2 = 0.4\text{m}$$

$$\text{Space 1} = 0.18\text{m}$$

$$\text{Space 2} = 0.27\text{m}$$

$$\text{Space 3} = 0.385\text{m}$$

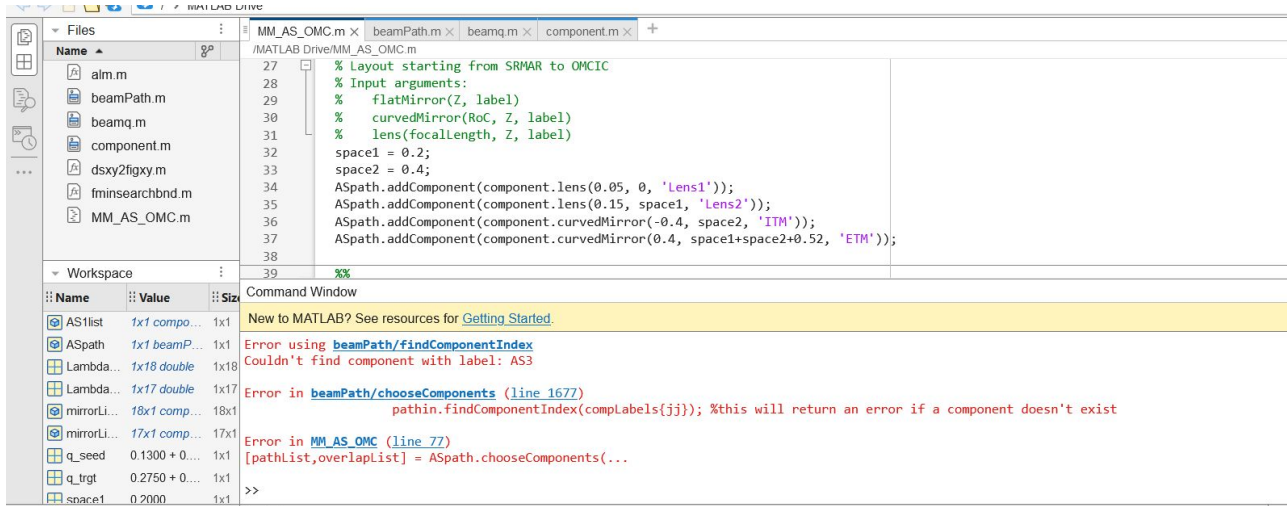


Tried A La Mode Code first.

So far, only works for 40m at Caltech

→ Need to configure it for VLC

→ Receive errors when changing components



The screenshot shows the MATLAB IDE interface. The top pane displays the code for the `MM_AS_OMC.m` script. The code defines a layout starting from SRMAR to OMVIC, with input arguments for `flatMirror`, `curvedMirror`, and `lens`. It sets `space1 = 0.2;` and `space2 = 0.4;`, and then adds components to the `ASpath` object: `ASpath.addComponent(component.lens(0.05, 0, 'Lens1'));`, `ASpath.addComponent(component.lens(0.15, space1, 'Lens2'));`, `ASpath.addComponent(component.curvedMirror(-0.4, space2, 'ITM'));`, and `ASpath.addComponent(component.curvedMirror(0.4, space1+space2+0.52, 'ETM'));`. The bottom pane shows the Command Window with several error messages:

```
Command Window
New to MATLAB? See resources for Getting Started.
Error using beamPath/findComponentIndex
    Couldn't find component with label: AS3
Error in beamPath/chooseComponents (line 1677)
    pathin.findComponentIndex(complabels{jj}); %this will return an error if a component doesn't exist
Error in MM_AS_OMC (line 77)
    [pathList,overlapList] = ASpath.chooseComponents(...
>>
```

The Workspace pane on the left shows the following variables:

Name	Value	Size
AS1list	1x1 compo...	1x1
ASpath	1x1 beamP...	1x1
Lambda...	1x18 double	1x18
Lambda...	1x17 double	1x17
mirrorLi...	18x1 comp...	18x1
mirrorLi...	17x1 comp...	17x1
q_seed	0.1300 + 0...	1x1
q_trgt	0.2750 + 0...	1x1
space1	0.2000	1x1