

Visible Light Cavity Update

Peter Carney

11/6 - 11/13

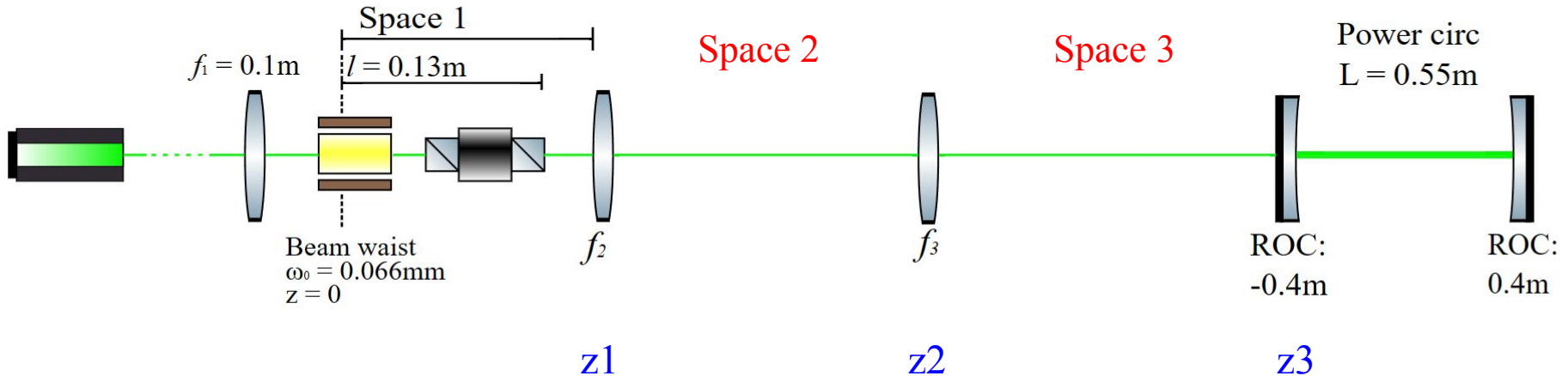
Mode Matching Telescope Layout

A La Mode Code:

- Initial $q = 0.15 + 0.0257i$
- Target $q = 0.275 + 0.1854i$
- Starting $z = 0.00\text{m}$
- Target $z = 0.73\text{m}$

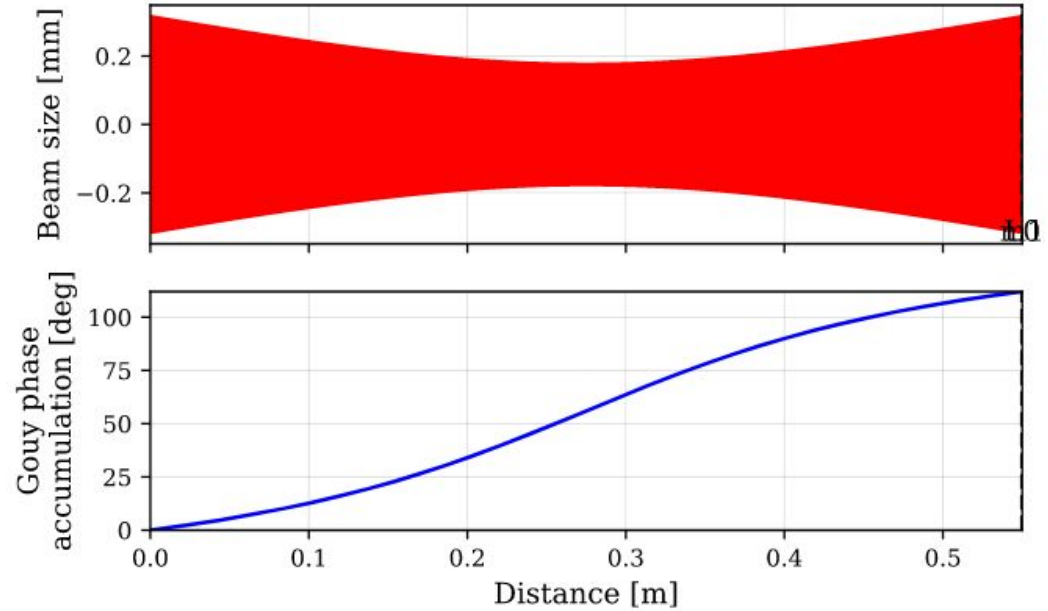
FINESSE:

- Initial $q: 0 + 0.0257i$
- Target Beam width: 0.317mm



Cavity Parameters: FINESSE

- Defined a cavity in FINESSE string with
 - ITM ROC = 0.4m
 - ETM ROC = 0.4m
 - Length = 0.55m
 - $\lambda = 532\text{nm}$
 -
- Parameters consistent with manual ABCD calculations



	z	w θ	zr	w	RoC	Acc. Gouy	q
m2.p1.o	0 m	177.19 μm	185.4 mm	316.97 μm	-400 mm	0°	-0.275 + 0.185j
m1.p2.i	550 mm	177.19 μm	185.4 mm	316.97 μm	400 mm	112.02°	0.275 + 0.185j
m1.p1.o	550 mm	177.19 μm	185.4 mm	316.97 μm	400 mm	112.02°	0.275 + 0.185j
L0.p1.i	550 mm	177.19 μm	185.4 mm	316.97 μm	400 mm	112.02°	0.275 + 0.185j

Potential Mode Matching Solution

A La Mode Output:

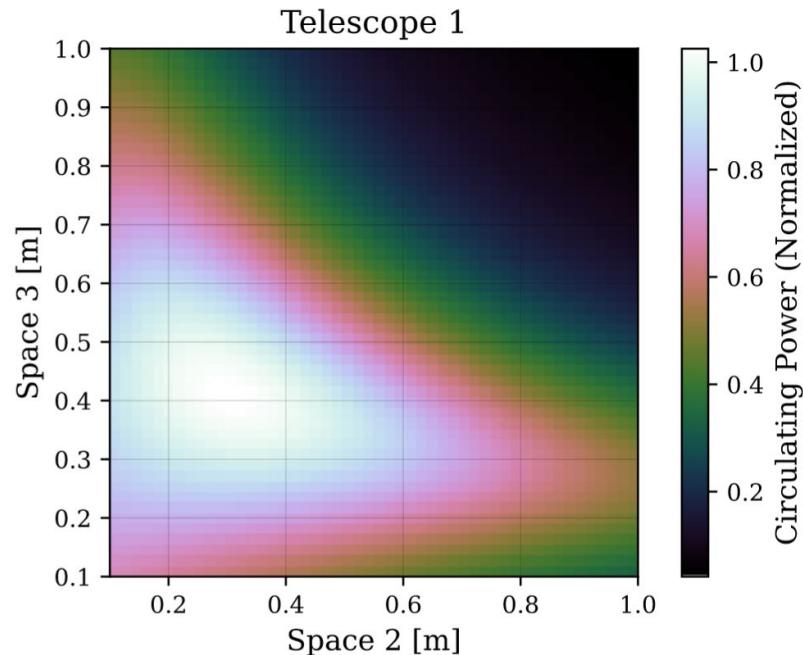
Component	z [m]	Parameter
Lens 1	0.1755	f = 0.25m
Lens 2	0.4712	f = 0.40m
ITM	0.8800	ROC: -0.40m

Sensitivity: 18.2723

Mode Matching: 1.000

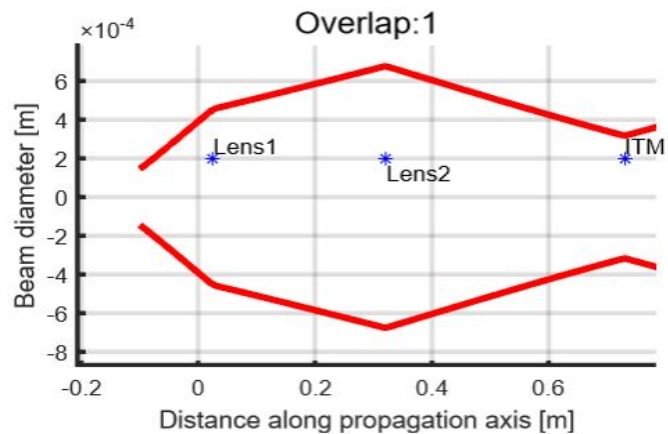
Components only defined up to ITM

FINESSE Output

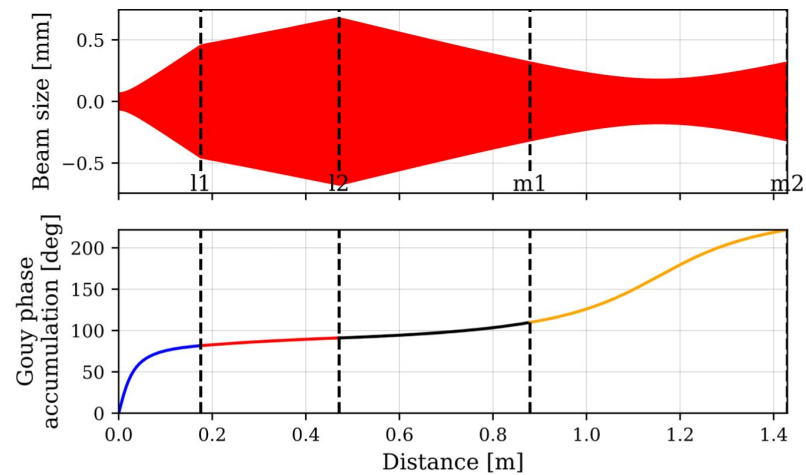


Beam Profile Comparison

A La Mode



FINESSE



Lenses in stock:

LA1172-A-N-BK7 Plano-Convex Lens

Focal Length: 0.4m

AR Coated: 350-700nm

1" Diameter

Available today

LA1461-A-N-BK7 Plano-Convex Lens

Focal Length: 0.25m

AR Coated: 350-700nm

1" Diameter

Available today