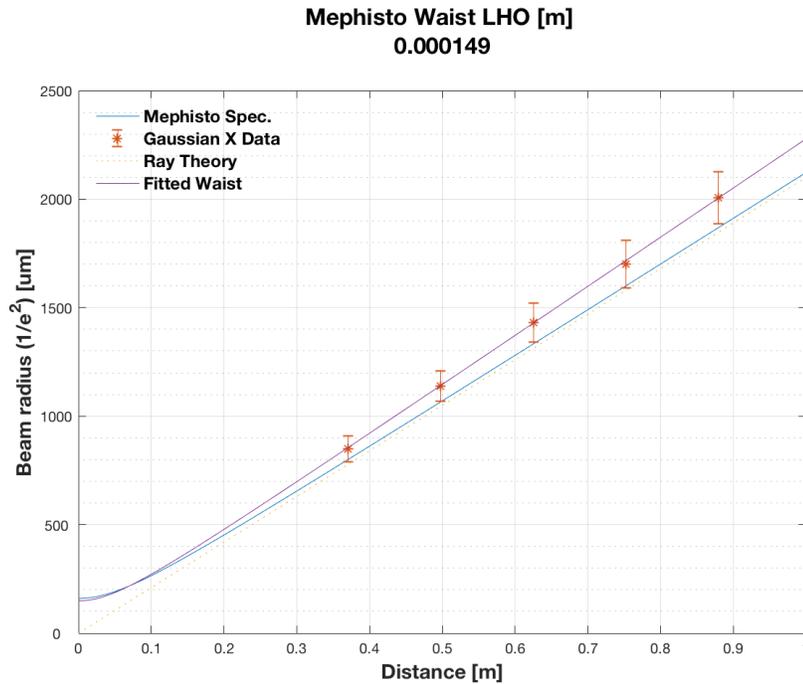
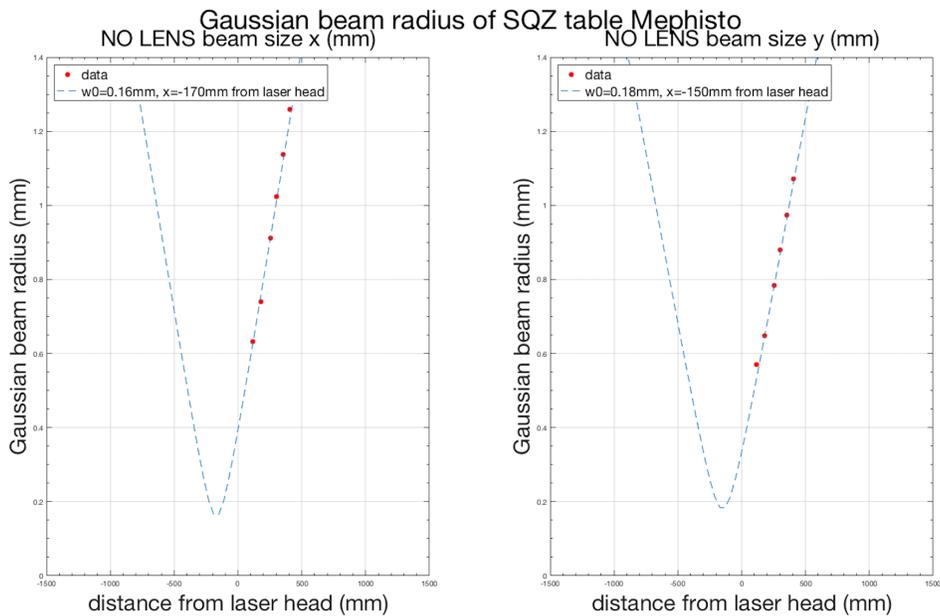


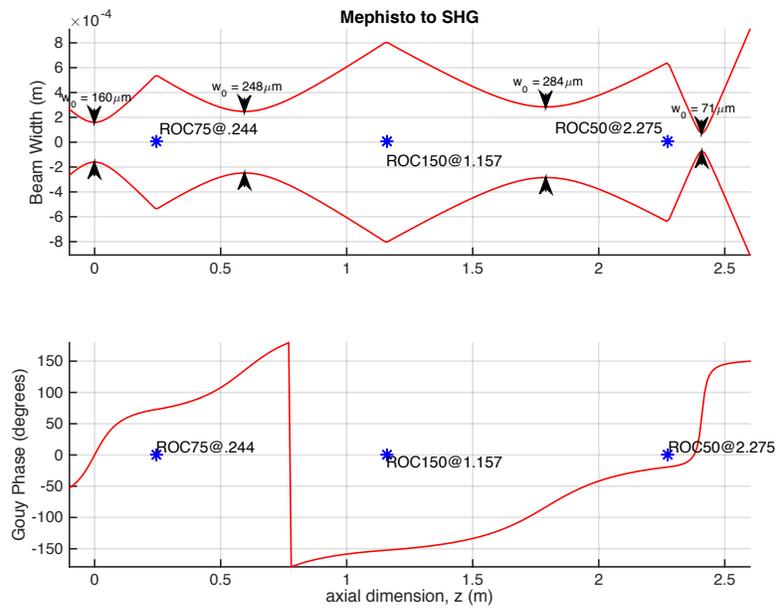
Below is the waist measured for the Mephisto squeezer laser at LHO with the Thorlabs beam profiler. Nominal laser power was 2.155A, threshold current .88A, diode temperature 20.22 and crystal temperature 25.08. Uncertainty is due to the numbers on the profiler fluctuating. Best fit is for a waist of 149um at a distance of 87mm inside the laser head.



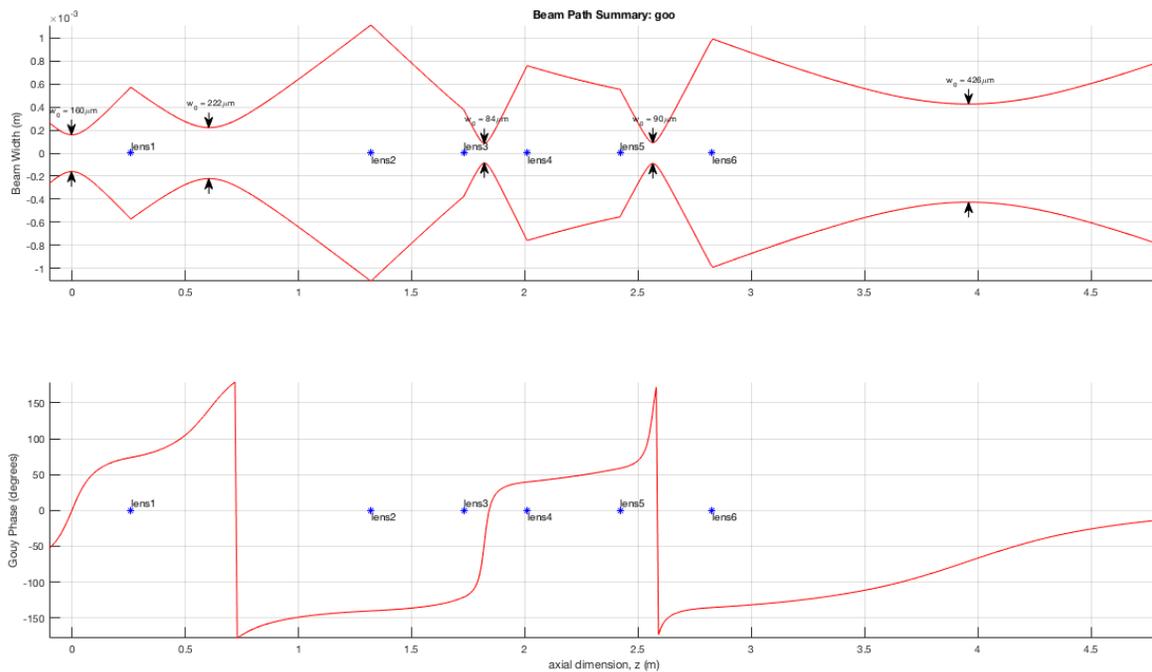
Nutsinee confirmed a waist of ~160um in the X axis and also measured the Y axis. I think there is an error in the waist position, but I trust the numbers for waist size.

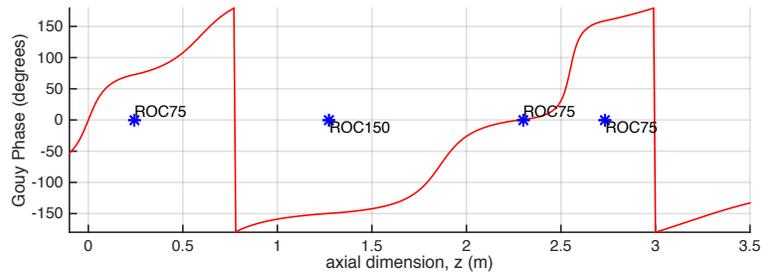
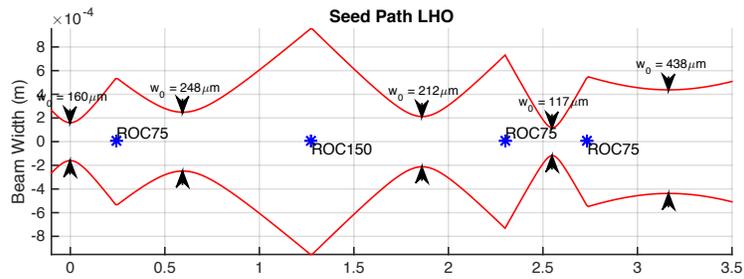
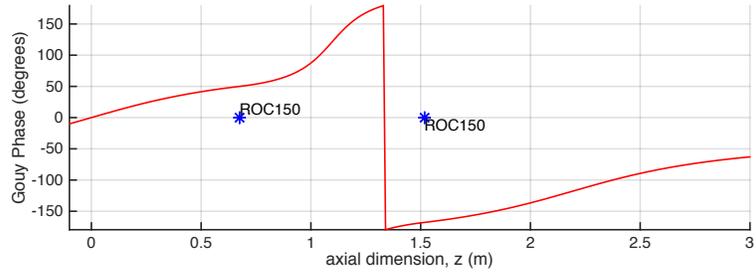
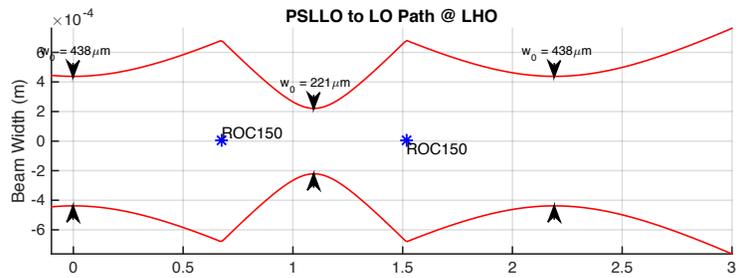


I used a waist of 160 μm for all the mode matching calculations for the various paths on ISCT6.

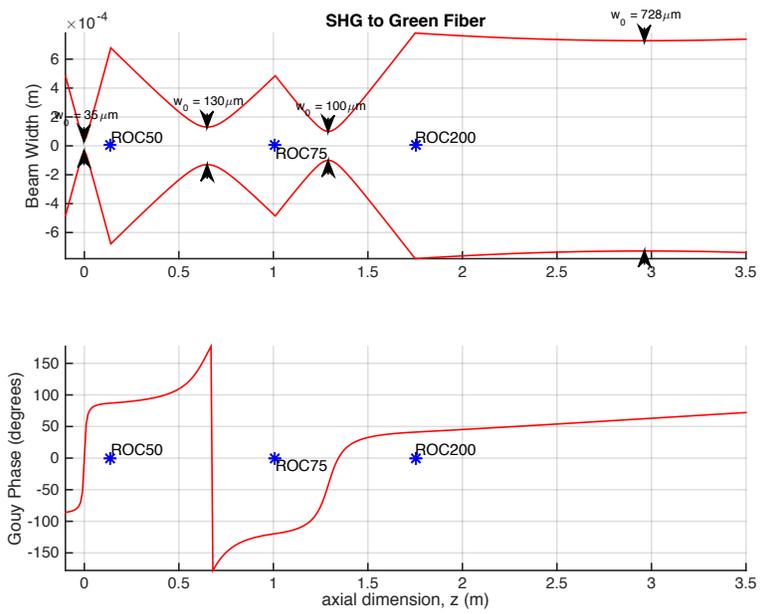


Path from Mephisto to CLF fiber. First AOM is between lens 4 and 5. Second AOM is at the waist after lens 5.

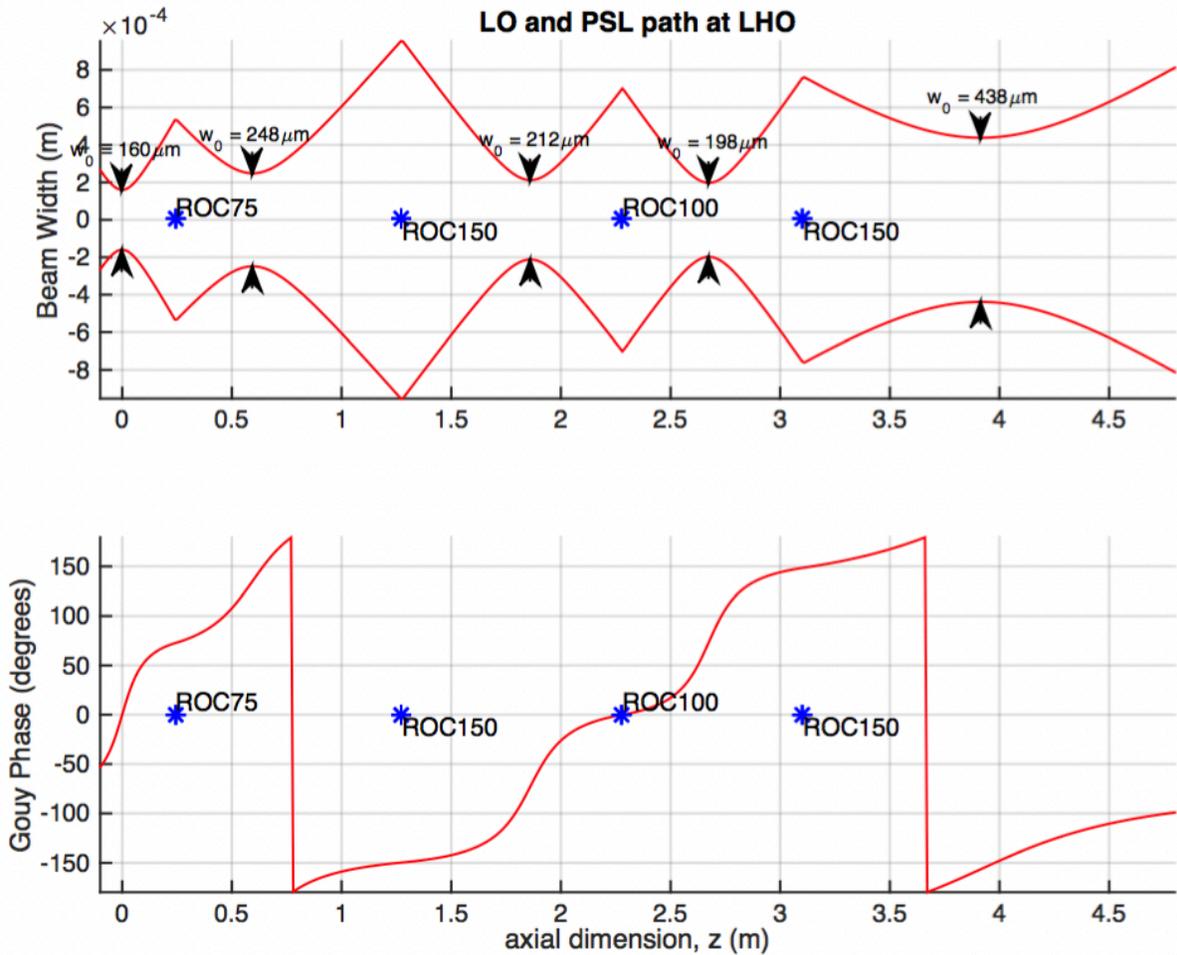




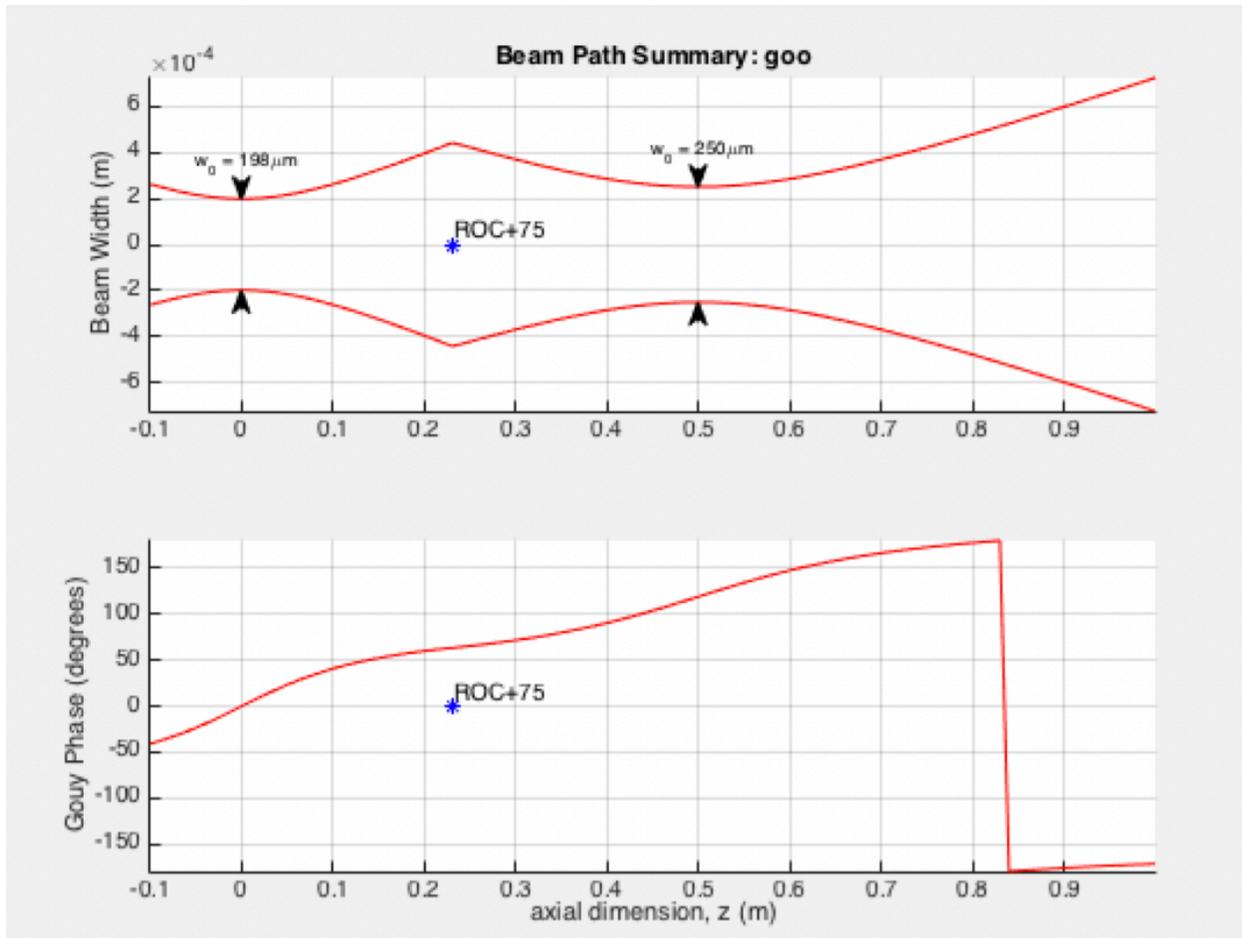
A second lens (the ROC75) was added to this path to accommodate the small aperture of any potential future EOM noise eater.



Original (rubbish) mode-matching solution from IR pump laser (Mephisto) on ISCT6 (waist 160um) to the PSL fibre (waist 438 um).

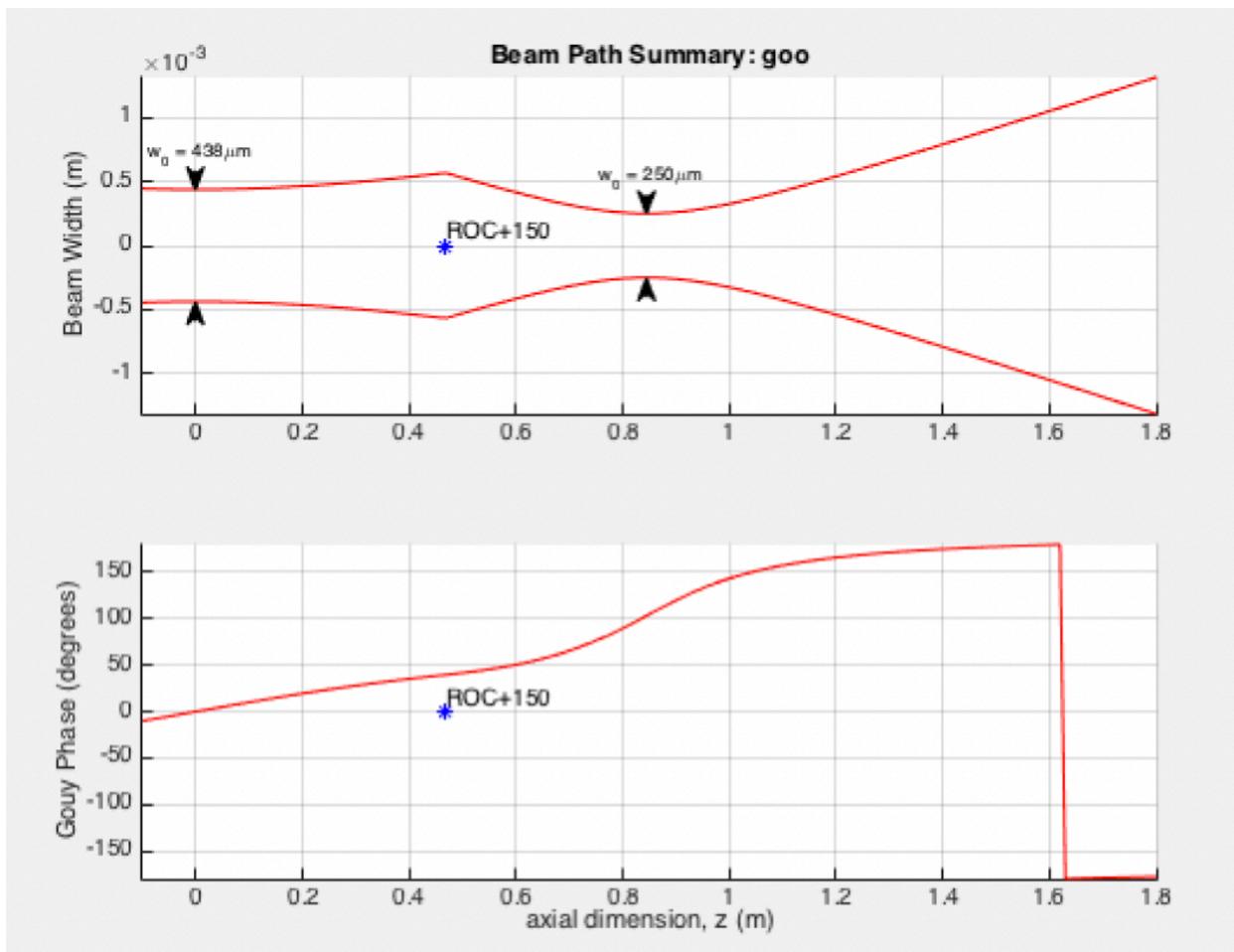


We use the 198 um waist in the above solution to create a new 250 um waist (see below) before the beat note detector (newfocus 1611).



```
goo.addComponent(component.lens(.167,.231,'ROC+75'));
```

We then take the path from the PSL fibre collimator (waist 438 μm) and create a 250 μm waist in the same position in front of the detector by implementing a ROC150 lens, see below.



```
goo.addComponent(component.lens(.333,.468,'ROC+150'));
```

In practice the existing ROC150 lens is moved toward the PSL fibre and the PSL fibre is moved back (closer to the end of the table) to position the waist at the same position (between BS9 and the detector) as the beam from the Mephisto laser, see below.

Note a focusing lens is also added just before the detector (not shown).

