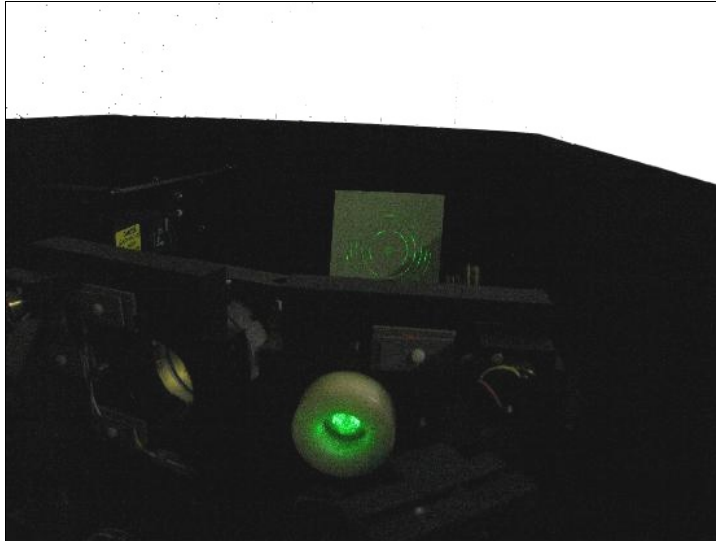
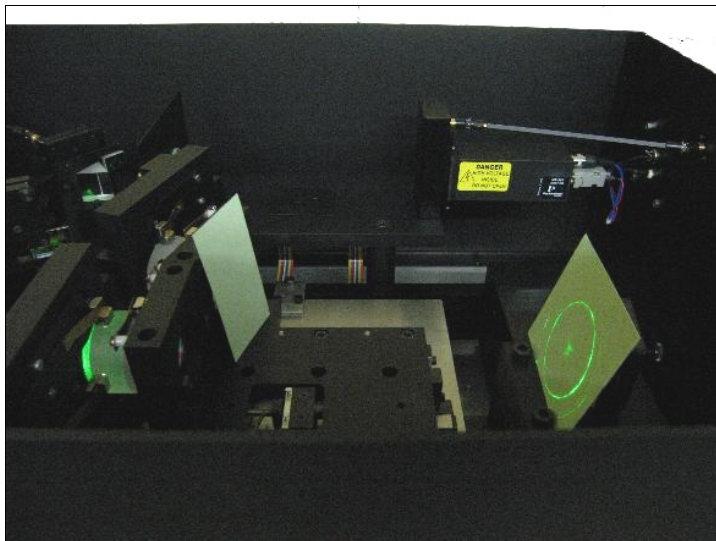


Calibration



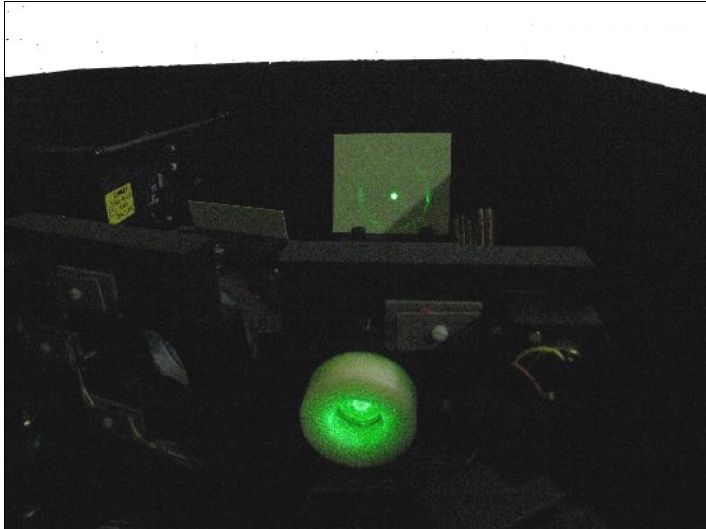
Calibration involves setting the correct relative spacing between the interferometers and setting the zero point of the dial gauge which measures the mirror spacing of FP1.

Switch the optics to "Align", place the 40mm focal length lens provided into the entrance of FP1 to a depth of about 15mm, and remove the aperture mask A2 on the back of FP1. Reduce the mirror spacing to around 100 μ m and observe the rings on a piece of card placed in front of mirror M3. To avoid seeing light transmitted by FP2, place a second piece of card in front of FP2.



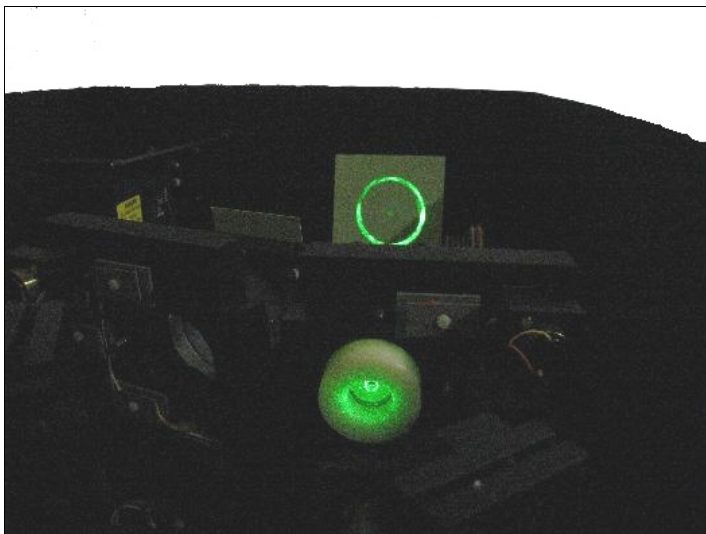
Observe that the diameter of the rings varies as the Z-control on the control unit is adjusted. Now continue to decrease the spacing step by step and observe how the ring diameter increases. After each step use the Z-control to reduce the first ring to a small disc and measure the diameter of the next ring. Stop when this ring reaches a diameter of roughly 60mm. Check that the dial gauge now indicates a spacing of about 40 μ m.

Now check FP2 by placing the f=40mm lens into FP2, and sliding the second piece of card over to cover FP1. A similar size of ring pattern should be observed. If not, your calibration is way out and a correction will be required to the spacing of FP2 by adjusting the 3 black screws on the adjustable mirror holder.

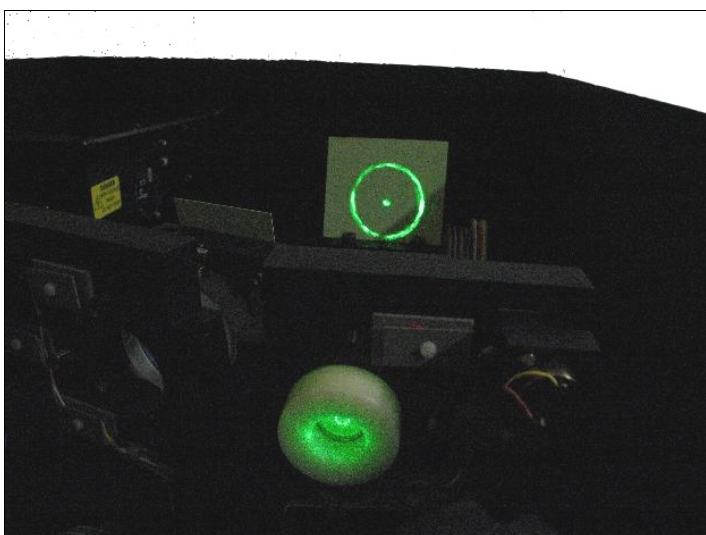


The procedure described so far is just a pre-calibration step. Precise adjustment is now achieved using the special conical lens provided.

Place the conical lens into the entrance of FP1, with the lettering "FP1" visible, and slide the second piece of card to cover FP2. As you change the Z-control you will now see two rings only – a disc and a ring of roughly 60mm diameter. Probably the ring and the disc will not reach maximum brightness at the same setting of the Z-control.



Set the Z-control so that the disc is at maximum intensity, and then change Z until the ring is maximum. Note the direction that you turned the Z-control to go from disc to ring. If the direction was clock-wise the spacing of FP1 is slightly too large. Adjust the mirror spacing by tapping the switch on the motor control – each tap will change the spacing by $0.5\mu\text{m}$ or so. Continue until the disc and the ring reach maximum brightness for the same setting of the Z-control.



FP1 is now set at the correct calibration distance. This distance depends on the laser wavelength used and can be found in section 3.6.2 of the manual. Adjust the dial gauge to read this value.

Now reverse the conical lens and place it into FP2 (the lettering "FP2" must be visible). Slide the second piece of card over to FP1. Adjust the Z-control (or ΔZ) until the ring or disc are at maximum intensity. If all is well both will reach maximum intensity together. If not, a small adjustment of the spacing of FP2 will be necessary.

Determine, as above, if the spacing of FP2 is too large or too small. Correction will be made by adjusting the 3 black screws on the adjustable mirror holder of FP2. A clockwise movement will decrease the mirror spacing. Proceed as follows.

Remove the conical lens and then make a small turn on the middle screw in the required direction. Vertical fringes will be seen. Adjust the screw until the fringes are spaced by about 3mm – this corresponds to a movement of the screw of about $3\mu\text{m}$ and is easier to achieve than it might sound! Re-align the mirrors of FP2 parallel using only the other two screws and finally the piezo-electric controls.

Check the spacing again with the conical lens and re-iterate if necessary until the correct spacing is reached.

Do not forget to replace the aperture mask A2 after completing the calibration. For further information check section 3.6.2 of the manual.