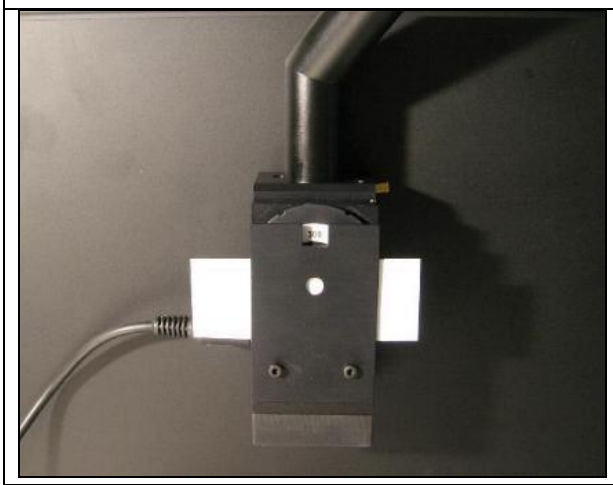
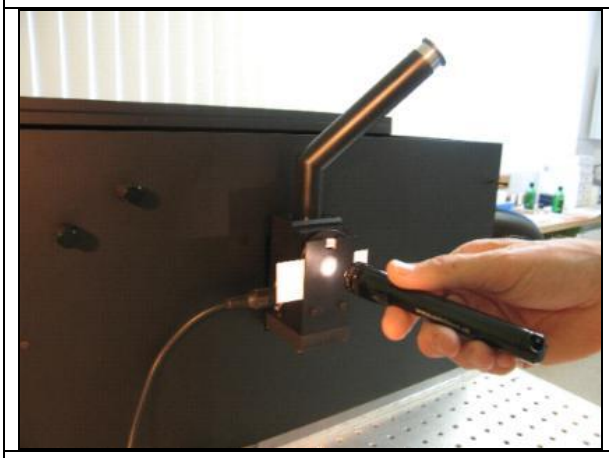
### *Alignment of reference beam*



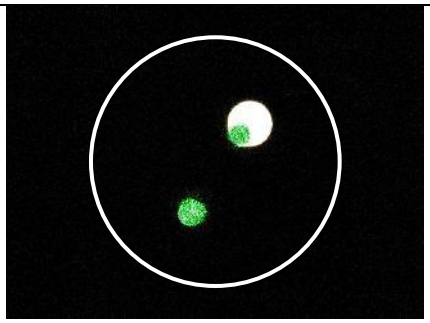
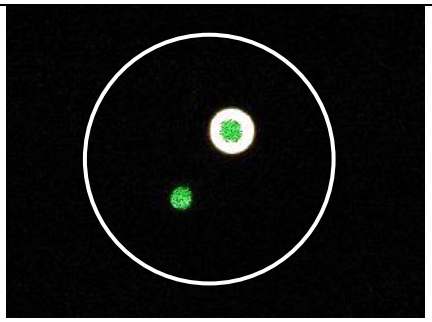
It is very important that the reference beam follows exactly the same path to the photomultiplier as the measurement beam. Failure to achieve good alignment will result in loss of signal and a small shift in the spectrum.

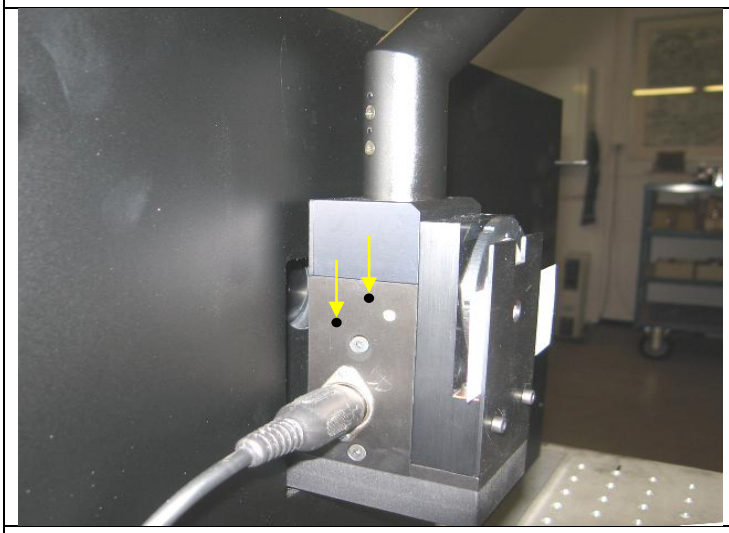
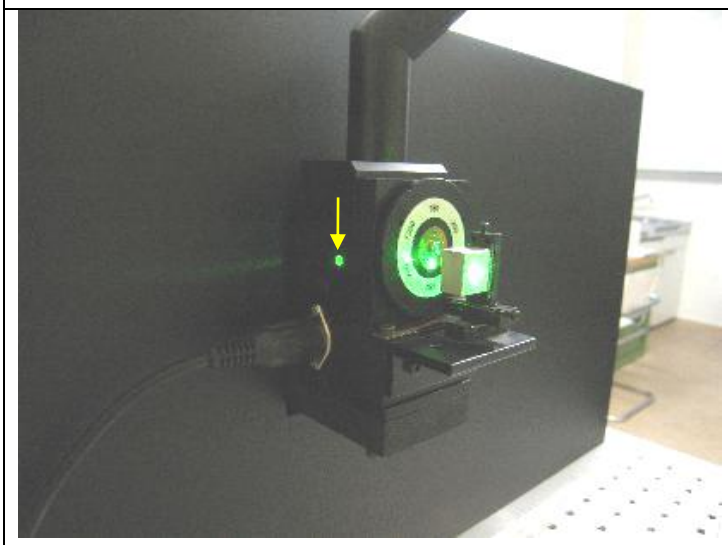
The reference beam, with an intensity of about 1mW, should be directed onto the diffuser on the side of the input shutter unit. If you look into the pinhole viewer you will see two green spots, corresponding to the beams reflected from the two sides of the beam splitter.



Only one of these beams will be used.

Make the entrance pinhole visible by placing a piece of paper next to it and illuminating with white light. Choose a pinhole size of 300μm. If you again look into the pinhole viewer you will see one of the green spots (reference beam) superimposed on a white disc (the input pinhole).

| not correctly aligned | correctly aligned |
|---|---|
|  |  |

| | |
|---|---|
|  | Use a 1.5mm hex key in the two holes indicated in order to align the beam splitter so that the green spot is nicely centred on the white disc.<br><br>The reference beam is now correctly aligned. |
|  | ***Alternative alignment procedure***<br><br>If no pinhole viewer is available, approximate alignment can be achieved by sending laser light into the input pinhole (150μm). A direct laser beam can be focussed onto the pinhole by a short focal length lens as shown here, or scattered light can be used. However the mirror M2 MUST be correctly adjusted following the procedure described in the “TFP - optics alignment” section. Block off the reference beam.<br><br>With the optics switched to “tandem” the light reflected from FP1 will be seen as a bright spot on the diffuser. Adjust the beam splitter as above until the spot has maximum intensity. |