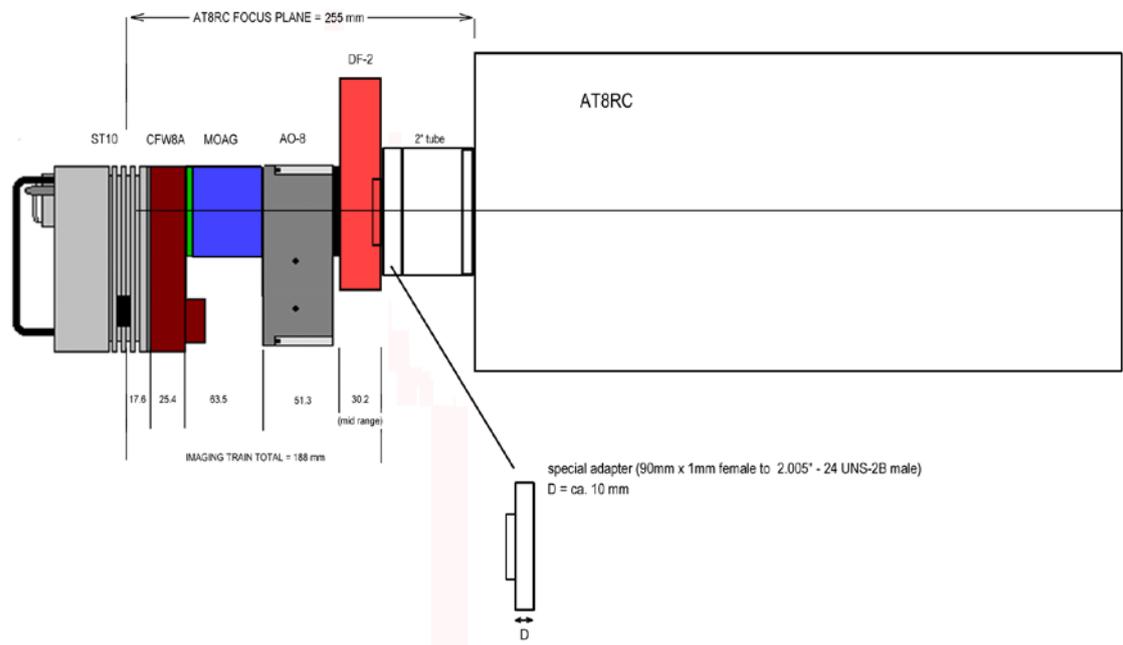
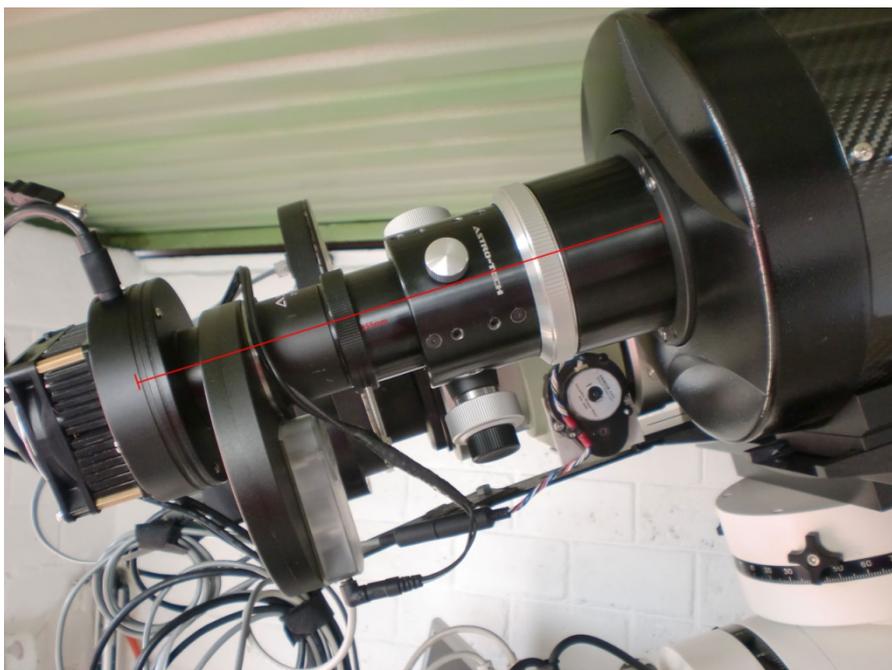


I plan to employ an imaging setup on the AT8RC telescope that consists of the following components:



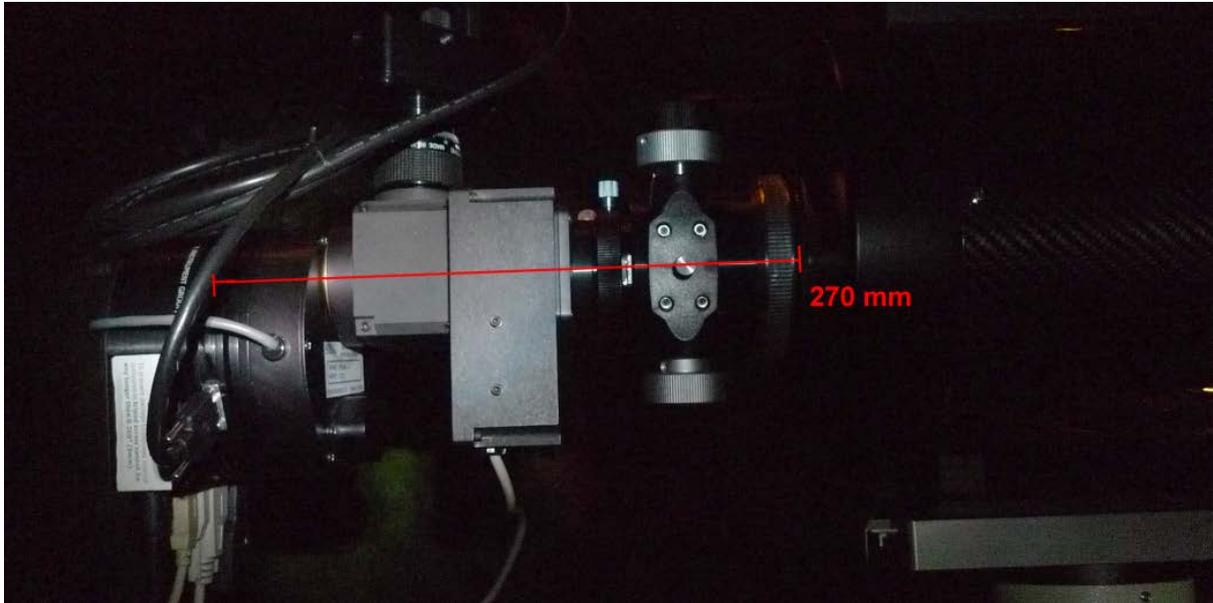
For increased mechanical stability I want to remove the Crayford focuser which is included with the AT8RC and rely entirely on the DF-2 focuser. I will need a special adapter that has a thickness precisely chosen so that the ST10 chip is located at the focal plane when the DF-2 is at the center position.

I have been informed by Florencio Rodil Posada that the AT8RC focal plane is located 255 mm behind the visible surface of the rear cell. A picture of his measurement is shown below:



<http://tech.groups.yahoo.com/group/astro-tech/message/1445>

I have made a measurement of the focal plane position for my AT8RC using a preliminary imaging setup where the Crayford focuser is in use and the DF-2 is not. The focuser was adjusted so that sharp star images were registered on the ST10 chip. A photo of the setup is shown below along with my measured distance of 270 mm:



There can well be some differences between my and Florencio's setup (for example, my setup has a 6mm thick glass plate in the AO-8) but this cannot explain the observed difference of 15 mm. It seems that my scope has a slightly longer focal length than Florencio's.

Another manifestation of this is that I cannot visually achieve focused stars, even when all three extension rings (two 1", one 2") are in use and when the Crayford is fully extended. I estimated that the eyepiece had to be withdrawn 1-2 cm from the accessory holder to get proper focus. Clearly, this is unsatisfactory. I will need an extra extension ring to use the scope properly.

Initially, I was worried about the fact that visual focus could not be achieved – perhaps my mirror was flawed? Later I found that many others experience the same behaviour which eased my worries a lot. Read more below.

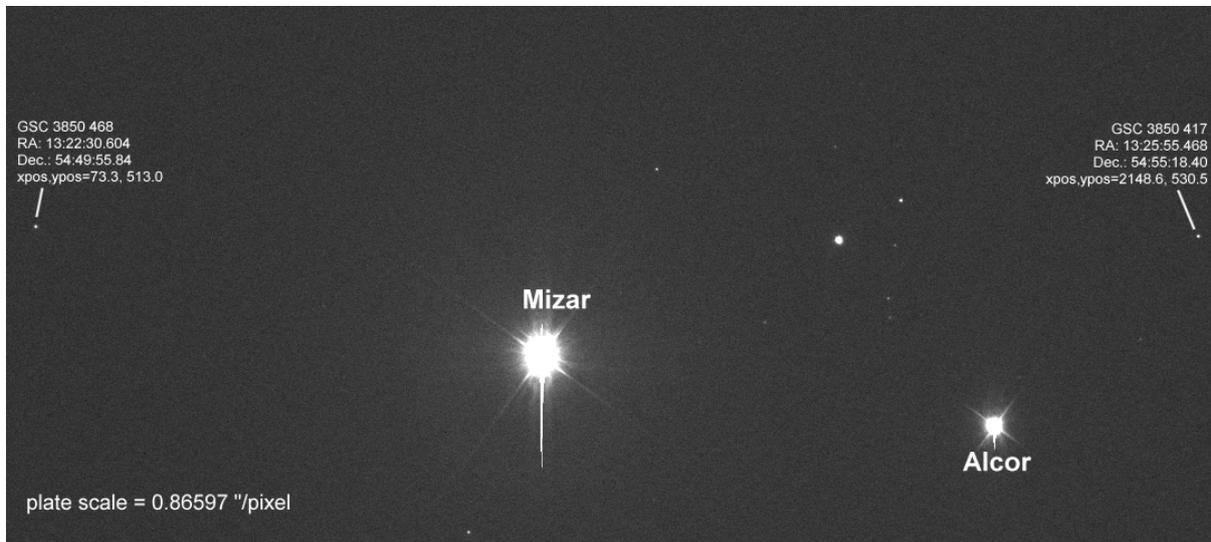
#### **UPDATE, May 2nd – 2011:**

Florencio told me that 1) he also cannot achieve visual focus using the extension rings alone – a few extra cm are needed, and 2) his FL as derived from CCD plate solving is 1600mm. I intend to get some CCD images with my setup to see what the derived FL value turns out to be. Since my backfocus appears to be 15mm further behind the rear plate I'd expect to get 1600+15mm from such a measurement. We'll see.....

Joel Short reports that he has a backfocus distance of 245mm, roughly measured (<http://tech.groups.yahoo.com/group/astro-tech/message/1546>).

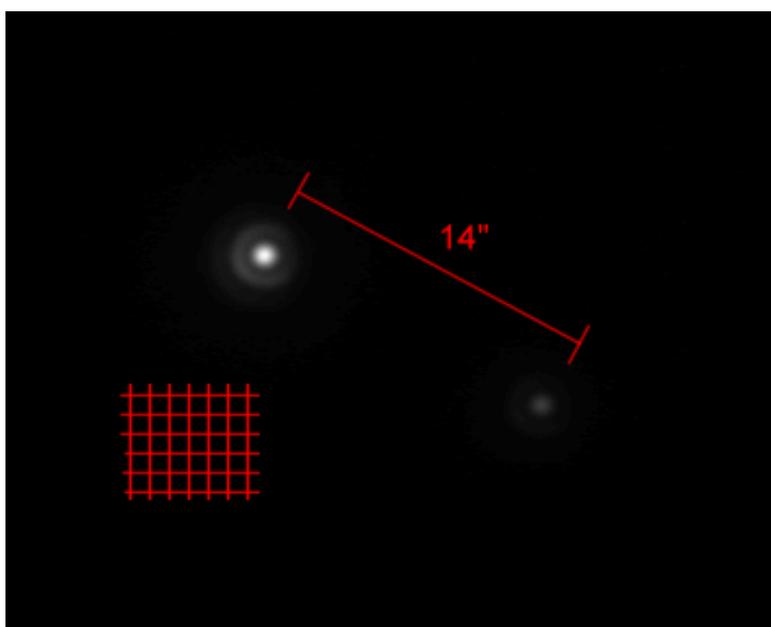
**UPDATE, May 5<sup>th</sup> – 2011:**

I took a 5-second image of Mizar which was quite near zenith using the temporary CCD setup described above. A cropped version of the image is shown below:



The angular distance between the two highlighted GSC objects is 1797" while the separation on my CCD is 2075.4 pixels. The image scale is thus 0.86597 "/pixel which corresponds to a focal length of 1618 mm. This is 18mm more than Florencio has and agrees well with the previously found differences in back focus distances between our scopes.

Using a 2" diagonal I could achieve focus using just the 2" extension tube. To check the collimation I inserted a 5x powermate, Bessel I-band IR filter and Skynyx 2-2M camera. Using a diagonal is not recommended for accurate fine tuning of collimation and hence this test can merely indicate whether collimation is far from perfect. Stacking the best quarter of a 1000 frame sequence resulted in the image below of Mizar A and B:



(grid illustrates the pixel size of my intended setup for deep sky imaging – ST10XE @  
f=1620mm)

The Airy ring diffraction pattern is clearly visible. Considering that this telescope has come directly from shipment the collimation is quite good. The Airy rings do show some asymmetry but whether or not this arises from collimation error or the use of a diagonal I do not know. To try and get a feel for collimating this scope I tried turning slightly one of the three collimation screws on the secondary mirror. This screw was very tight and I could not perform a controlled adjustment. Comments from other AT8RC users should be gathered before proceeding.