

Collimating with a DSLR

When I arrived in Indiana on my last trip down there I found that I had left my Hotech SCA collimating laser at home. As Doug didn't have a functioning laser on hand I had to improvise.

I normally align my mount with my DSLR in place and aligned parallel to the tube so I decided that I would use the camera to aid in collimation. After aligning the mount I slewed to Altair and turned on LiveView. After defocusing I had the beautiful out-of-focus image of a 'doughnut' that showed that the shadow of the secondary was quite off-centre. The mount was tweaked to place the image of Altair in the centre of the sensor.

I knew that my newtonian rarely needed the secondary collimation tweaked which was good as it meant that I only needed to work with the primary mirror adjustments. I could reach these easily while viewing the LCD screen of my DSLR. This wasn't an issue anyway as if the adjustment screws were too far from the focuser to reach I would have connected the DSLR to my netbook. The image could then be viewed from just about anywhere.

With the image on screen I moved Altair up and to the left using the movement buttons on the mount's hand controller as shown in the second graphic. The direction I moved it was in the direction of the thin part of the 'doughnut'. I took Altair as far as I could in the needed direction while keeping it on the sensor.

Once that was done I turned my attention to the collimating knobs on the rear cell of my telescope and, adjusting them as needed, moved the image of Altair back to the centre of the DSLR's LCD screen. This showed the image a bit better collimated, but still needing adjustment as shown in the third graphic.

I repeated this sequence four or five times until the shadow of the secondary was perfectly centered in the spread out image of Altair and Altair was in the centre of the LCD. I didn't bother checking with an eyepiece as the image scale on the LCD seemed perfect for the job at hand.

This method would work perfectly well with any two mirror telescope such as an SCT very simple. With one of the new Ritchey Chretien scopes with a centre spotted secondary or a newtonian, checking the secondary first with a Cheshire would allow for an extremely accurate collimation to be performed; even with a coma corrector or flattener/reducer in place.

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