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# HUBBLE

## ARTIFICIAL STAR(S)



### Collimate Without Losing Dark Sky Time

By David Snay

You can do it during the day. You can't do it at high noon, but early morning and twilight hours are fine, twilight is best. You don't have to worry about keeping a moving star in the field of view. I know, I know. It's not the star that's moving, but you know what I mean. Perhaps best of all, the artificial star(s) and your telescope only need to be approximately 20 feet apart, maybe 30 if you are operating at very long focal lengths.

We all know that proper collimation can make the difference between pretty

good and stunning views at the eyepiece of any telescope. This is even more important when you're imaging the heavens. Like most astronomers, I hate to use valuable clear sky time on anything but viewing and/or imaging. Every now and then I give it go, and usually end up stopping when I get a reasonably good set of diffraction rings. I know it could be better and that I really should take the time to get it "right," but I run out patience and deem the image quality good enough.

Not only do I not want to spend

night time collimating, but when I'm trying to be steady enough to do a good job of collimation it seems like I have a "Fresh Meat" sign plastered to my back to attract all the mosquitoes, gnats and other flying and biting insects in a 10 mile radius. I also feel like I spend as much time re-centering the target star as I do adjusting the alignment of the optics.

All Stars Lit One Star Lit

To solve these problems, I picked up a Hubble Artificial Star(s) device to use

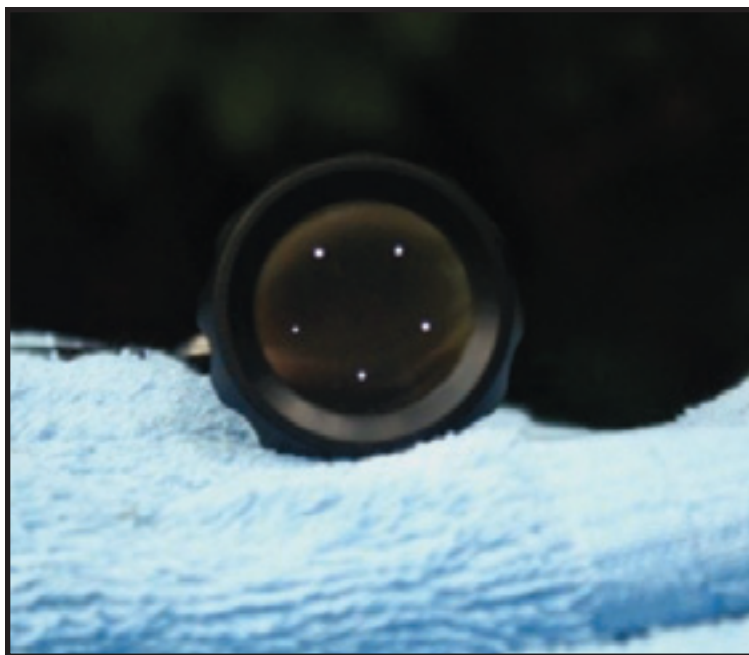


Image 1 - All Stars Lit



Image 2 - One Star Lit

for collimating my telescopes. This little device is pretty slick. At first glance it looks like nothing more than a little flash light. However, when you look a little closer you realize that it's got 5 really bright LEDs and 5 pinholes of varying sizes, as shown in the "All Stars Lit," (Image 1). You only need to use one of the stars at a time. You choose which opening to use based on the size and focal length of your telescope. The device comes with a small magnetic mask that you place on the front to block all but the one "star" you are using at the moment. You can see the mask in the "One Star Lit," (Image 2).

### But Does it Really Work?

Okay, enough about the concept. Does this thing really simplify collimating a telescope? The short answer is absolutely yes! Not only does it work, it's quite simple to use. I attached my telescope to a heavy duty camera tripod for simplicity. Then I just placed the Hubble Artificial Star(s) on the stone wall (resting on a towel) that separates my yard from the local golf course. I've suspected that my scope was out of collimation but I hadn't realized how far off it was. When I aimed this little gem at the optics and defocused the light, it was immediately clear that I had work to do. I've never collimated a re-

fractor before, but I have collimated my SCT and quite a few reflectors so I understand the objective pretty well. In fact, I can collimate my SCT in under 5 minutes after hauling it across Massachusetts for the Summer Star Party hosted by the Rockland Astronomy Club every year. But a refractor doesn't have any mirrors.

So how do I adjust the lenses? I had previously done some online research (I love the net!) and found some information on where to find the collimation screws for my telescope. I even tried to collimate using a real star, with no success. The movement of the star and the small set of rings frustrated me before I was able

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