ASTRONOMY EXPERT R.E.E.G.O. COLLIMATOR INSTRUCTION MANUAL

USER GUIDE FOR REFRACTING TELESCOPES

Dear Customer, thank you for purchasing the Astronomy Expert R.E.E.G.O. (R.E.E.G.O = Recognition of Elements Extraxiality through Glows Observation; R.E.E.G.O = Recognisation of Elements Extraxiality by Glance Observation), universal collimator, compatible with refracting OTAs, Newtons, RC, Cassegrain-derivatives, catadioptrators. Using this instrument is very simple and intuitive, but we suggest you to follow this step-by-step guide, always acting with no haste, taking all of the time required to perform a proper and accurate operation!

This collimator is supplied with a pre-installed CR2032 battery. Please make sure that it is functional and correctly inserted before proceeding.

All of the collimation processes with R.E.E.G.O. they can be executed in the day time. We therefore suggest you to start placing your OTA on a flat table, removing all of the caps and covers.

Step 1: preliminary setup

To perform a correct alignment, please insert the R.E.E.G.O. collimator in the eyepiece holder of your refractor, being sure to maintain it in perfectly coaxial position compared to the focuser and the OTA. If you do not have a concentric eyepiece holder you can also simply place the collimator in your standard eyepiece holder, preventing to tighten the locking screws: the R.E.E.G.O. is very light-weight yet very robust, so you will not have to worry about potential disastrous falls.

Keeping the tube in a HORIZONTAL position, proceed step-by-step, as follows:

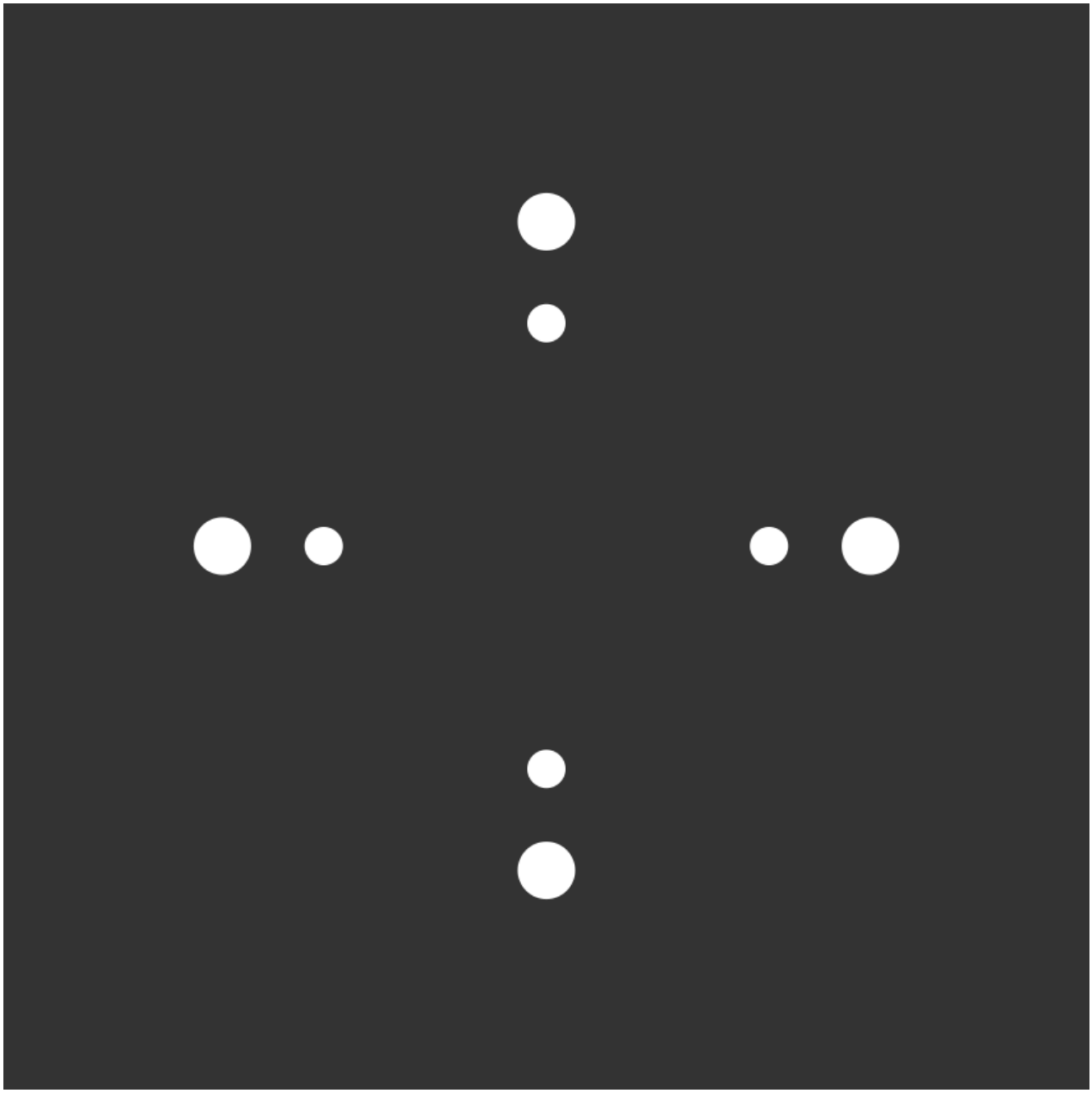
- Withdraw your telescope's focuser in full, bringing the draw tube to the minimum possible extraction.

- Insert the R.E.E.G.O. collimator in your eyepiece holder, paying attention to concentricity, as described above.

- Apply, if you removed it, the front lens cap to the dewcap of your OTA, or, if you don't have a cap available, put the telescope's front lens towards a dark surface, like a black cardboard sheet.

- Turn on the R.E.E.G.O. in "Refractor" mode. You will see four white LEDs light up.

Now, looking through the collimator's front hole, if your OTA is perfectly collimated you should see someting like this:

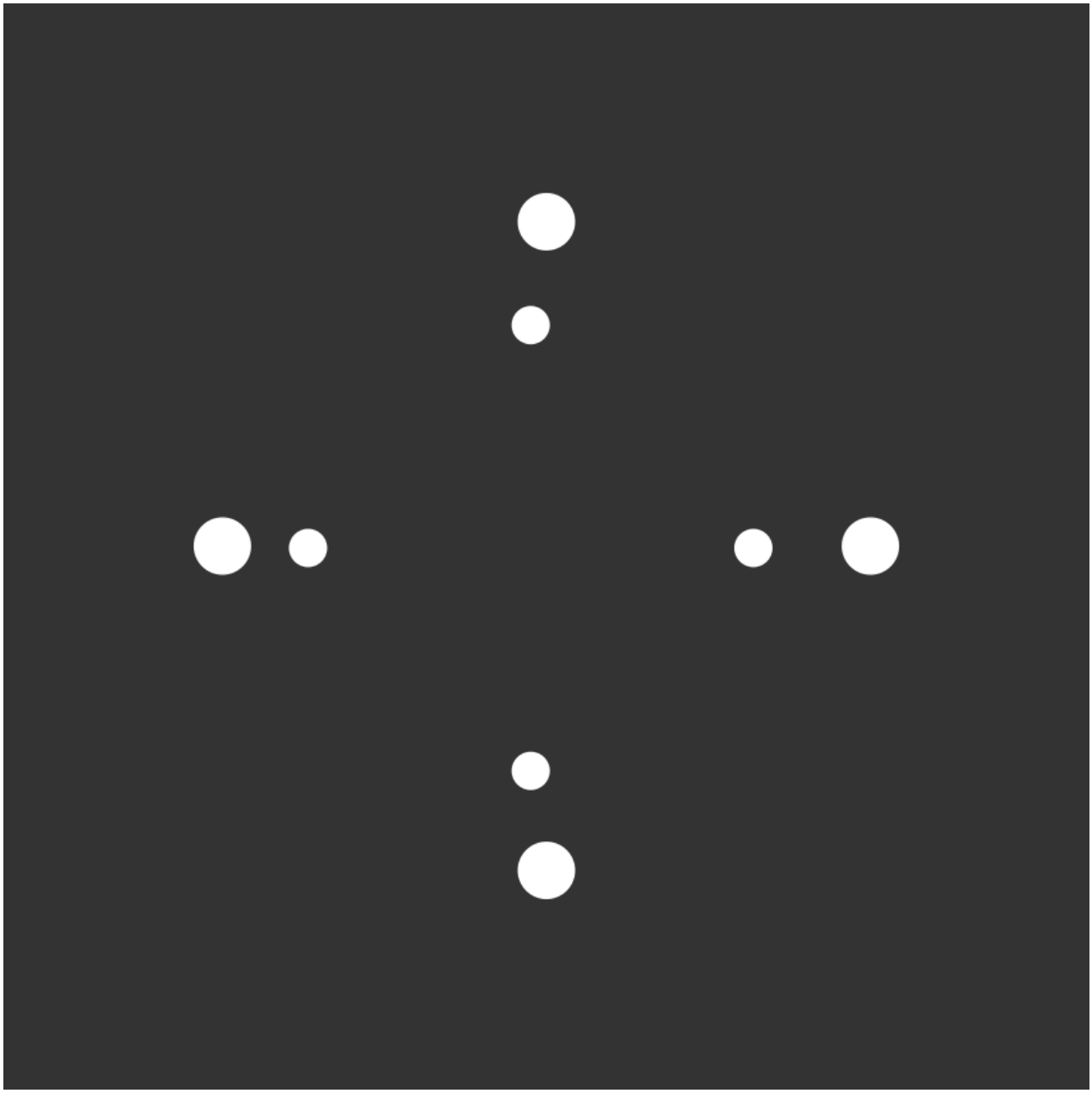


Depiction of a properly collimated refractor.

If what you see corresponds to what is depicted here above, simply stop here: your OTA is already perfectly collimated!!

Step 2: calibration of the focuser

More probably, you should see something like that:



Depiction of a slightly mis-collimated refractor.

If your telescope shows a light pattern similar to this, then the need for a re-collimation is definitely very slight. In most cases the problem will be just related to a (often physiological) misalignment of the focuser and the optical relevance of this will be exclusively related to wide field astrophotography.

A very simple yet effective test, you can easily do at home if your focuser has a 360° rotator, is to check the collimation state throught the R.E.E.G.O., while rotating the focuser on its axis. If you notice that during this process the reflection pattern produced by the R.E.E.G.O. collimator changes significantly, just find and lock the focuser at the point where the light-pattern seems to be more regular and closer to the one shown in Step 1.

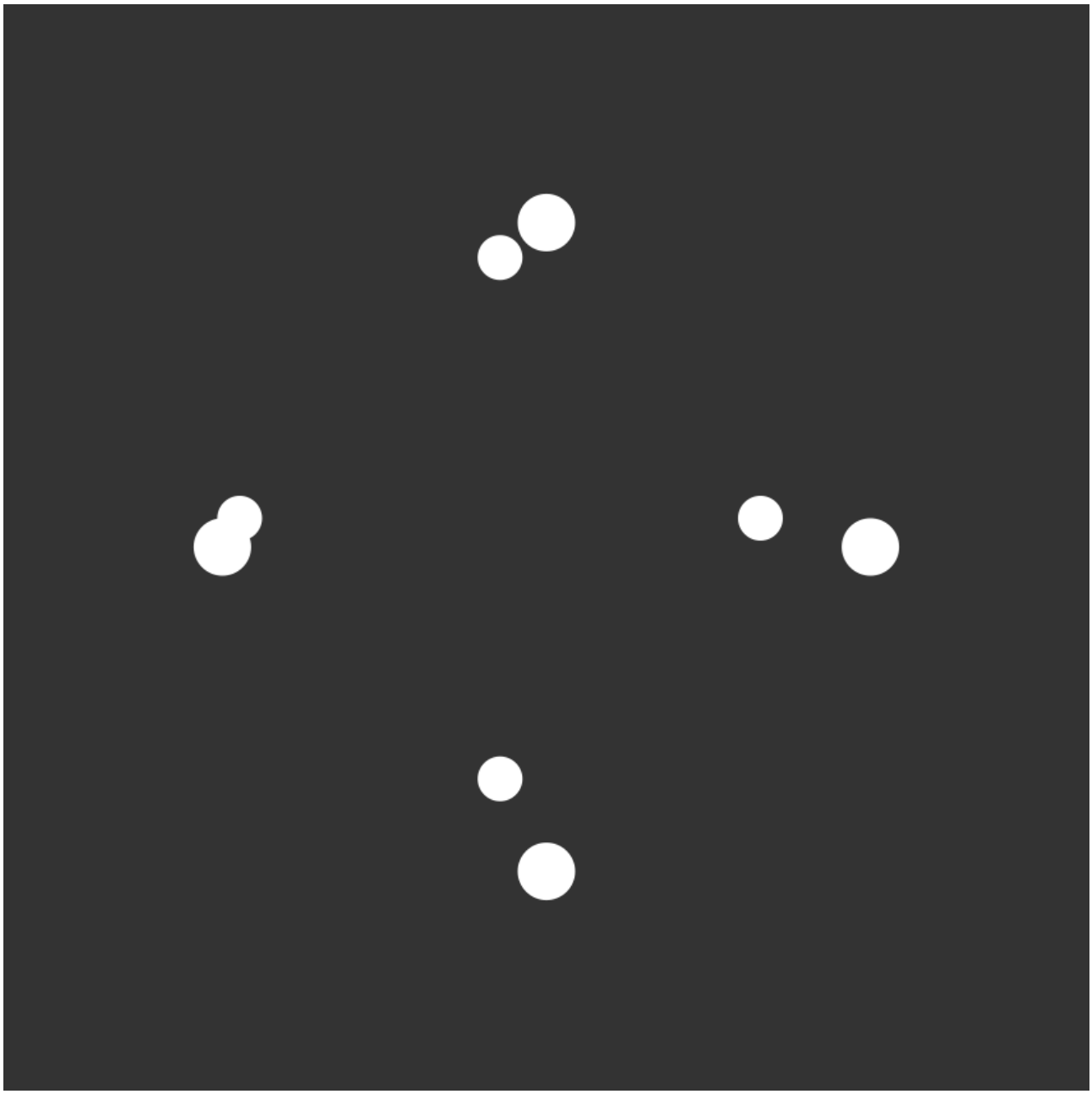
During your astrophotographycal session, keep your OTA's focuser in that position, just rotating the camera within the eyepiece holder or rotating the entire optical tube within the rings. To remember the exact position to be kept, we advice to make use of a couple of common stickers you should put both to the fixed part and to the rotating section of the focuser.

If you use a flattener or flattner/reducer system, you might experience in some mid- to large-sized sensors an asymmetrical elongation of the stars at the edges of the field, often very close to the edge of the image.

In the eventualiy you may notice some problem like that, you should than consider buying a high precision tilter which is a cheap, convenient and very effective solution, rather than checking your focuser's position in deep. Each single focuser is different from another, and has a dedicated connection flanges system and/or a specific rotation mechanism. So it should not be altered by people with few experience. Our advice is therefore to always contact the official support for your OTA, the person who sold it to you or at least a technician of proven ability who operates in a well-structured laboratory before proceeding to more in-deep operations.

Once you get a satisfying collimation, just consider the process finished.

Step 3: collimation of the telescope



Depiction of a heavily mis-collimated refractor.

If what you are facing is different from what we have described in Step 1 or 2, as the light pattern seems to be highly irregular and much more distorted than the ones depicted so far, almost certainly the collimation of your OTA is seriously compromised.

In this case, it becomes necessary to realign the objective cell and the tube, or the lenses within the cell itself. The problem could also be the result of a combination of lenses', cell's, tube's and focuser's problems.

If your OTA comes embedded with a cell collimation system, you should simly act on the specific collimation mechanism, until you reach a perfectly regular pattern, like the one shown in Step 1.

If your OTA has no cell collimation mechanisms, but just single lense's registration screws, you should not proceed by your own at home, at least unless you are a highly skilled person.

Please notice that not all of the telescopes produced do guarantee such a high mechanical and optical quality standard that you can expect a perfect result, even if you are a professional technician: some OTAs, especially the cheapest ones, simply comes with an inaccurate factory assembly and an extremely poor mechanical design. This means that the opto-mechanical configuration, on some OTAs, simply cannot and should not be altered, or the telescope could be massively damaged.