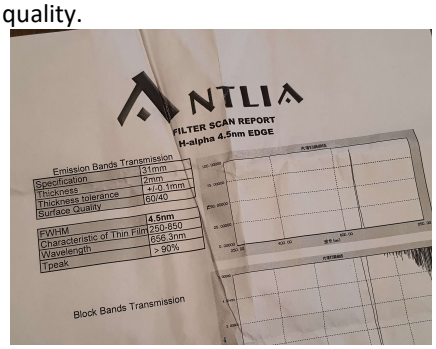
Review of the Antlia 4.5nm EDGE Narrowband Filters

(Author: T. Mueller, March 2022)

In February 2022, there was an opportunity to test out the new **Antlia 4.5nm EDGE narrowband** filters. The test samples were provided by Teleskop-Service Ransburg GmbH, Germany.
These filter series fit well in the Antlia portfolio, which covers high quality ultra-narrowband filters and multi-line narrowband filters. The test samples came as unmounted 31mm filters. They are also available as 1.25" (mounted), 36mm (unmounted), 2" (mounted) or 50mm diameter (unmounted).

Hands On

The filters came in nice, transparent, apparently high quality, plastic boxes with magnetic clips. Each filter is itself additionally protected with a little paper bag and comes with a transmission test protocol. The filters are 2mm thick and have black coated edges to minimize reflections. All appears to be high quality.



[Note: As usual with unmounted filters, the user must be very careful when handling these filters. Cotton gloves are highly recommended when mounting these filters.]

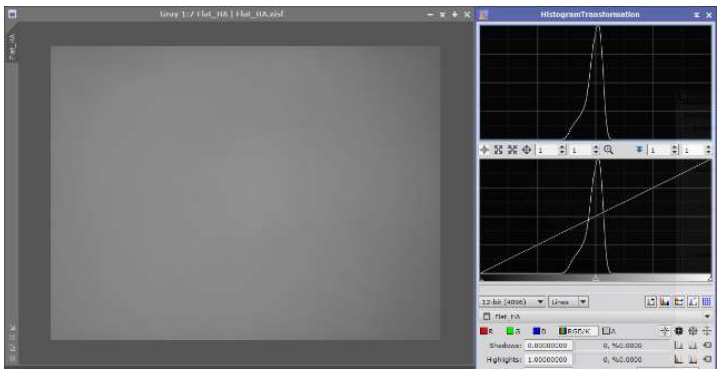
Test equipment

For testing, the filters where mounted in a 7 x 1.25" filter wheel from ZWO, replacing standard 7.5nm Baader filters. To mount them properly, the original ZWO screw-on holding rings where used.
A ZWO ASI1600MMPRO CMOS camera, a well-known 4/3" camera with 16 Megapixels and 3.8µm pixel size acted as imaging camera. The used telescope was a TS-Optics 76 EDPH, a f4.5 three element, Apochromatic refractor, with a three-element corrector.

Guiding and tracking was performed by a Skywatcher AZ-EQ5 mount with an external guide scope and PHD2 guide software.

Flat field / Vignetting

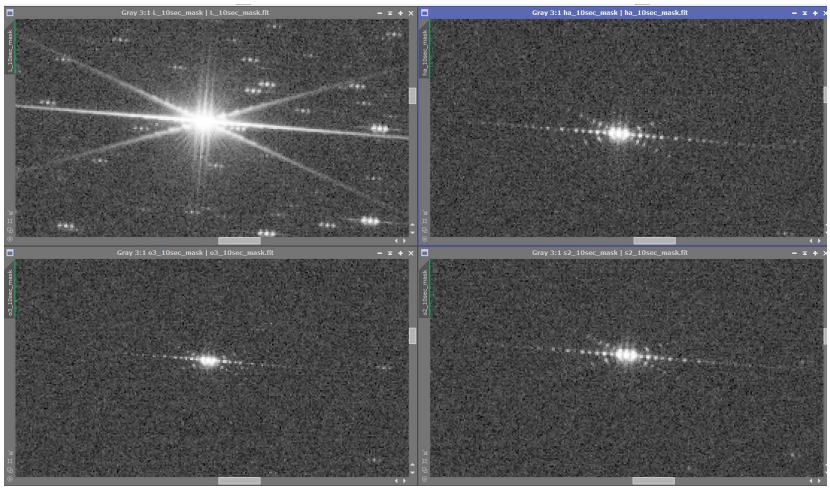
Over the test period, only very few nights where useful due to severe weather. The first check was carried out to determine the flatness of the field, by doing flat frame exposures against the dusk sky.
The slightly larger diameter (compared to mounted 1.25" filters) results in a good illumination of the 4/3" sensor, considerably better than with 1.25" mounted filters.



Parfocality

Even there are not stated as parfocal, it is interesting to know how much refocusing is needed when changing filters. Also with the parfocal Baader filters, it is needed to refocus slightly, especially for OIII. For focusing, a Bathinov focusing mask was used.

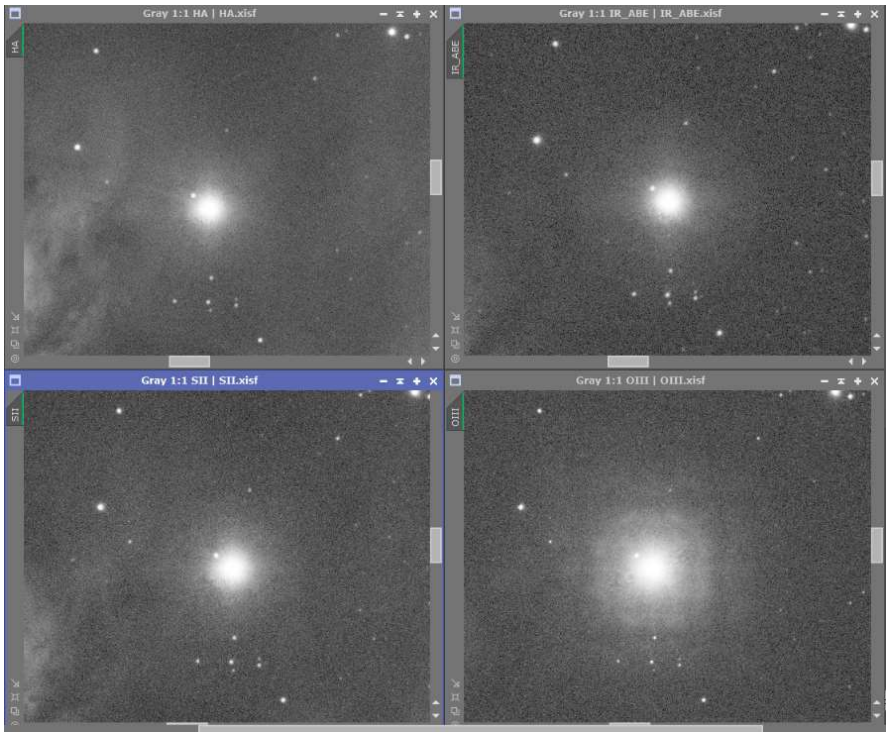
In comparison, the first image was focused with the Ha filter and then switched to OIII and SII respectively. The effect for focus shift is visible, the OIII filter needs some microns of refocusing. But SII is still in good focus. Not a big issue, especially with motor focusers, but the end user should be aware of that possibility.



[Note 1: But here, it is important to know that with a refractor system, often the focus plane changes due to optic laws over different wavelengths.]
[Note 2: No pure mirror system was used for this test, so no quantitative value can be given for the effect of the filter only.]

Halos

Unfortunately, highly specific filters like these ultra-narrowband filters can produce halos (reflections) around very bright stars. This issue is already known for the 3nm filters and may also occur with the 4.5nm filters. So, an explicit test was made to determine this effect. This image shows the star Alnitak (ζ Orionis, 2.03mag). A direct comparison between the three filters shows the star with 200% magnification. Here, the halo effect is visible with the OIII filter. And it is overlaid by the microlensing effect of the Panasonic MN34230 sensor. The specific appearance depends highly on the system (front window type, camera and sensor to filter distance).



Notes on image acquisition

Especially when coming from wider filters (6 … 12 nm) the integration time with narrower filters needs to be (much) longer. Throughout the test with the Antlia 4.5 nm filters, exposure times of 10 minutes per single frame where still not background limited (“Bortle 4” class sky). This enables the user to use the filters under a bright moon phase in contrast to wider filters. Even with the moon > 70%, images can be acquired.

Shift of focal plane

When using a filter in front of the camera, the working distance of optical correctors may change slightly. That given, it may be needed to change the camera to sensor distance. For the tests done, no visible influence on the working distance was determined.

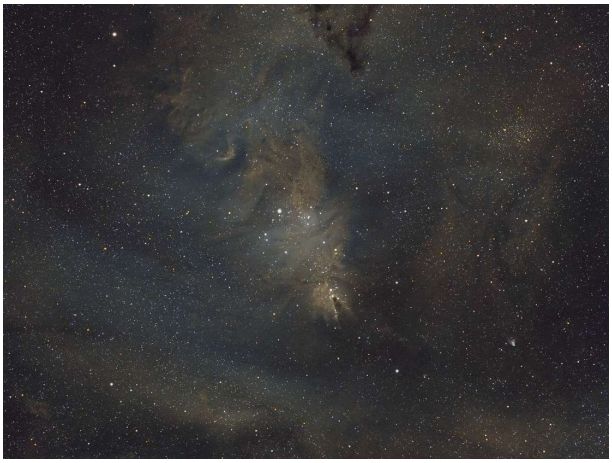
Conclusion

When looking for new narrowband filters, the performance but also the price range varies heavily. These Antlia 4.5nm filters lie between both extremes. They provide a good narrow bandpass and are available for a reasonable price. If the possible halo effect is acceptable, then these filters are recommended. Otherwise, only much higher priced filters can provide better results.

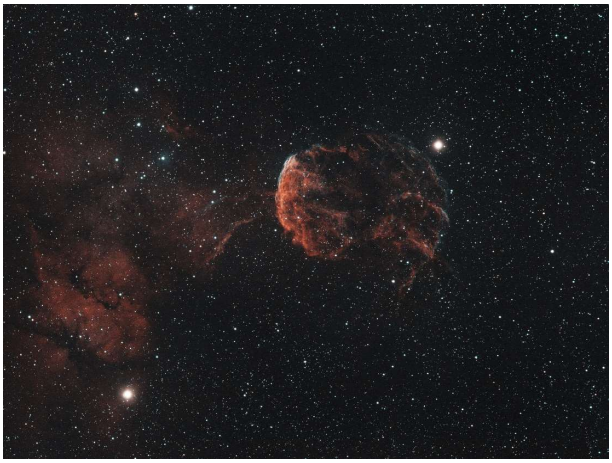
I want to thank Teleskop-Service Ransburg for the opportunity to test these filters!

Regards
Torsten Mueller

Some Results



Christmas Tree Cluster – SHO Combination
15 x 5 min x 3 channels



The Jellyfish Nebula- HOO Combination
15 x 5 min x 2 channels

Rosette Nebula – SHO combination
10 x 10min x 3 channels

Horsehead Nebula - SHO Combination
3 x 5 min x 3 channels