

The New Paracorr Type-2

Also Enhances Contrast, Resolution, and Limiting Magnitude!

By Mike Harvey

Let me begin by stating that this will not be a highly technical report. I'm not an optical physicist and just looking at most of the math makes my head hurt. What I am is simply an observer with over 30 years of experience at the eyepieces of a variety of large, high-quality telescopes. What I offer is not theory or conjecture – it's merely an honest, unbiased report of actual observations in-the-field.

When Tele Vue introduced the original Paracorr, it provided the catalyst for major advancements in the fast-Newtonian revolution. Suddenly, $f/4.5$ scopes became the norm. While it's easy and certainly accurate to say that much of the Paracorr's popularity was due to the aesthetic improvement it provided for star images over a larger field of view, the less-obvious, but more important benefit was that it actually corrected the images by focus-

ing more light into the Airy discs and rendering a more cohesive image with greater detail and resolution. Observers who dismiss the Paracorr simply by saying that they are not bothered by coma miss this all-important point.

Recently, mirror makers have worked their art down to ratios of $f/3.66$ and $f/3.3$, and even $f/3$ and $f/2.5$ are being explored. Concurrently, Tele Vue has introduced the Ethos 100-degree field eyepieces and the Paracorr Type-2 to bring large-aperture observing to a new level.

I think it's important for users to understand that the true function of the Paracorr is to increase the diffraction-limited field of view; which it does – wonderfully! Over the years, the expectation has somehow become “pinpoint stars, edge-to-edge.” While it does deliver this type of performance with many



scopes and eyepieces, it's not a universal constant. Due to the vagaries of telescope design, component quality, collimation, optical physics, and individual physiological idiosyncrasies, there will be differences. In other words, as the old slogan goes, “Your mileage may vary.”

Several years ago I purchased a 28-inch $f/3.66$ Starstructure Newtonian (**Image 2**) with an outstanding Steve Kennedy primary and found that the original Paracorr worked well with the Nagler eyepieces I preferred, even though it was not designed to perform at such a fast focal ratio. The old-faithful Paracorr even managed to acquit itself well when I upgraded to the remarkable Ethos line. But with the 21-mm Ethos at $f/3.66$ ratio, I could see that the limits were really being pushed, and in a session with a 24-inch $f/3.3$, it was clear that the limit had been exceeded.

THE NEW PARACORR TYPE-2



Image 1

Enter the New Paracorr Type-2

I acquired my Paracorr Type-2 a few months ago and, along with Mike Zammit who builds the incredible Starstructure telescopes, have managed to test it extensively in several large, fast scopes. Without mak-

ing you wait until the end of this article, I can tell you that, in my opinion, the new Paracorr Type-2 represents an evolutionary improvement in observing that is no less dramatic than the Ethos eyepieces themselves!

Along the way, we discovered just how much each individual's eyesight affects the performance of a given eyepiece in a given scope! We involved a number of fellow observers at the Chiefland Astronomy Village, in

Chiefland, Florida, in the testing and found that one observer would remark that the stars were "pinpoint edge-to-edge" and another observer, using the same scope-plus-eyepiece combination, would complain about "flaring" or "coma" near the edge. Some observers could see the entire

field of view in an Ethos and some could not. What also became clear is that these differences in perception increased as focal ratios decreased.

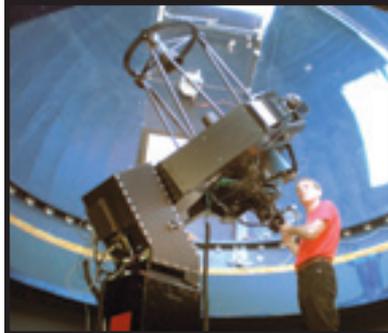
As noted, some observers said they had to move their viewing eye around to see the edge of the field and that the stars were not always pinpoints. This variation in noted sharpness may be due more to a mismatch between the position of the observer's eye pupil and the exit pupil of the eyepiece as the observer moves his or her head around to look at the edge of the field. Combine that with the fact that faster focal ratio systems require more critical pupil placement and it's easy to see why these physiological variations make it extremely difficult for some to draw firm performance conclusions as to how fast a mirror system can be and still retain ideal edge performance from a given eyepiece.

But some observations were comparatively consistent. For example, most observers were completely satisfied with the 21-mm Ethos in the $f/3.66$ scope. In the $f/3.3$, however, most felt that the 17-mm Ethos was not only preferable, but perhaps perfectly matched.

All of this, though, deals with the aesthetics of the views. Here's the real breakthrough: The new Paracorr Type-2 does such a magnificent job of eliminating coma and increasing the size of the diffraction-limited field of view that contrast, resolution and limiting magnitude are all enhanced! In fact, the increased contrast and the jet-black backgrounds were the first things every observer commented on. And the magic that Al Nagler's protégé, Paul Dellechiaie, has conjured up also dramatically improves longer focal ratio scopes as well. To our surprise, the Paracorr Type-2 is not just for the new generation of fast Newtonians; anyone who uses the original visual Paracorr will want to seriously consider upgrading!

A typical example is the reaction of Margie Wright **Image 1**. With her 16-inch $f/4.3$ Starstructure, known far and wide for its outstanding optics, and a vintage Para-

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corr carrying a 21-mm Ethos, the NGC-6960 section of the Veil Nebula was “nice” – even without a filter. Then I replaced her original Paracorr with the Paracorr Type-2. Her first word when looking through the same eyepiece at the same object was “Wow!” Her next words were “it’s like you put in a UHC



Image 2

filter, only there’s no dimming!” Much more detail was seen in the Veil and the background was jet-black. She also commented that she could put stars right at the very edge of the field and they remained “perfect points.”

Moving to M27, the goal was to determine how many stars could be seen with direct vision inside the Dumbbell. With her old Paracorr and the 21-mm Ethos, I saw five and Margie saw three (there’s that difference in eyesight again). Again, changing to the Paracorr Type-2, Margie then saw five and I moved up to six and commented on how much more fine nebulosity was visible at the edges.

Every object we observed brought the same results. I suggested we move to M31 and see how prominent the NGC-206 star cloud was. With the older Paracorr, it was certainly visible, but with the new Paracorr Type 2 it was dramatically revealed and the dark lanes in M31 suddenly jumped out. Several observers remarked that using the Paracorr Type-2 was “like adding more aperture.”

I later learned from Tele Vue that a contributing factor to our observations is that the Paracorr Type-2’s Tunable-Top has a greater range than the original. This, specifically, helps the 21-mm Ethos and the 31-mm Nagler reach their ideal, correct positions. All in all, using ultra-wide-field eyepieces, such as the Ethos with the Para-

corr Type-2 in a fast reflector achieves a synergy that brings a new level of dramatic visual observing experiences. By maximizing resolution, contrast, and true field, while reducing or eliminating ladder steps, the new Paracorr Type-2 is bringing us closer to the most exciting large-Dob viewing imaginable.

On the nuts and bolts side of things, the new Paracorr Type-2 is beautifully built, as you would expect from Tele Vue. The 1.25-inch adapter fits so perfectly and installs and removes so smoothly, it’s almost sexy, and the new model is much more user-friendly in the dark, at the scope. It is much easier to rotate from one position to another and the various settings are clearly and precisely marked. A complete chart of settings for every Tele Vue eyepiece is included. There are also now two set screws for the compression ring to better hold your eyepieces, which insures proper optical alignment. While the new design is slightly longer than the original model, there is no feel of additional bulk. Other than easier adjustment and the extra set screw, it’s hard to tell the difference in the dark. 

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