Equipment review

Meade's LX90-ACF eliminates coma

High portability, easy setup, and high-quality optics make this scope a winner.

by Mark M. Marcotte

The tried-and-true 8-inch telescope from Meade has taken another step forward with the latest version, the LX90-ACF. "ACF" stands for "Advanced Coma-Free." Coma is an optical defect that distorts off-axis images (those far from the field of view's center).

The LX90-ACF comes equipped with multicoated optics, a GPS receiver, two finder scopes, Level North Technology, and the AutoStar controller with Auto-Align software. Meade's design of this telescope emulates the optical performance of a Ritchey-Chrétien design (which also eliminates coma), but at a fraction of the cost.

Under the starry sky

So does it work? I didn't have a Ritchey-Chrétien telescope for a comparison, but I did use the LX90-ACF and an earlier model LX90 on everything from the Moon to some faint planetary nebulae.

My observing showed the LX90-ACF optics work as advertised. I received clear, coma-free images of stars and galaxies to the edge of the field of view.

Lack of coma was most apparent when I viewed open star clusters. The constellation Auriga offers many of those, such as M36, M38, and especially the magnificent Salt and Pepper Cluster, M37.

Globular clusters also were quite spectacular. M3 in Canes Venatici and the Hercules Cluster (M13) stood out as well-resolved showpieces. The LX90-ACF served up outstanding views of the Moon, Saturn, and Jupiter, too.

Views of double stars were also excellent, with no shifts from the colors I expected to see. Most galaxies and nebulae appeared as they should through this size telescope. And the scope kept its defect-free promise as I looked at multiple galaxies in the same field, such as M81 and M82 in Ursa Major. Observing both galaxies at once meant I had to place each at the edge of the field, and that's when the coma-free optics excelled.

How'd they do that?

To produce a flat, coma-free field similar to the kind provided by a Ritchey-Chrétien telescope, Meade uses a full-aperture aspheric corrector lens in conjunction with a spherical primary mirror. In essence, this creates a two-element optical system that performs like the single hyperbolic primary mirror of the Ritchey-Chrétien telescope design.

Meade mounts the hyperbolic secondary mirror directly on the rear of the corrector lens. This eliminates any image-degrading diffraction spikes that conventional spider vanes can produce on a Ritchey-Chrétien scope.

Meade also uses an oversize primary mirror in its LX90-ACF line, meaning the primary is slightly bigger than the corrector lens. In the case of the 8-inch LX90-ACF, the primary measures 8.25 inches. According to Meade, this oversizing results in 5 to 8 percent more off-axis light reaching the eyepiece. Another

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The LX90-ACF includes a computer-controlled fork mount and a sturdy tripod. All photos: *Astronomy*: William Zuback



Meade's LX90-ACF features an optical design that eliminates the optical defect coma.

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Specifications

Meade 8-inch LX90-ACF

Focal ratio: f/10
Focal length: 2,000 millimeters
Onboard celestial database: 30,223 objects
Optical tube dimensions: 9.1" x 16.75" (23cm x 42.5cm)
Telescope weight: 33 pounds (15 kg)
Tripod weight: 19 pounds (8.6 kg)
Includes: GPS, AutoStar hand controller, red-dot viewfinder, star diagonal, 8x50 finder scope, 26mm Plössl eyepiece (77x)
Price: $1,999

added benefit of the corrector lens is that the closed-tube design keeps the optics free of dust and moisture.

Meade used the same tripod for the LX90-ACF that it supplies with all of the LX200 series telescopes. The tripod is big and sturdy, with telescoping legs that are easy to extend and retract. Each leg has a lever-type locking handle. This is an improvement over the two-knob system used on earlier tripods. A single heavy-duty threaded rod with a large handle fastens the telescope to the tripod and also braces the legs. It's a good, solid design that works well.



Let the computer drive

Aligning the telescope is just a matter of flipping on a switch. Once you power up the drive, all you need to do is enter the "AutoAlign" command into the AutoStar controller. The GPS will then enter your location and the correct time into the computer, and the drive's Level North Technology module will find north.

Once it knows the directions, the drive points the scope to the first alignment star, waits for you to center the star in the field of view (press "Enter"), and then moves to the second star. Center the second star, hit "Enter" again, and you're ready to observe.

Also available on the AutoStar menu is "High Precision." This feature will allow you to fine-tune your alignment as your observing session progresses.

Meade incorporated the Level North Technology module into the SmartFinder, another new feature on the LX90-ACF. It is a wide-field, nonmagnifying, red-dot finder that you'll use to initially center the object. It has brightness and blink-time adjustments.

The other finder scope is a competent 8x50 finder with a 5° field of view. It has a six-point mounting system that makes it easy to adjust when you're aligning it prior to observing.

Of course, the workhorse that ties this whole package together is the AutoStar controller. This unit has been a steady performer for Meade for several years. Using it is intuitive and easy. Meade provides a holder for the controller that fits conveniently on the telescope's handle. The accompanying AutoStar Suite disc allows you to download any updates.

Grade A all the way

Overall, I found the 8-inch LX90-ACF to be an outstanding performer and a good value. With a limiting magnitude of 14 and a resolution of 0.57", it produced enjoyable images of all types of objects.

It's a great utility telescope that is light enough to be set up by one person and compact enough to tote around in the trunk or backseat of a car. The GPS and Level North Technology make it a snap to align, and the AutoStar controller assures it's simple to operate.

Meade also offers the LX90-ACF with 10-inch and 12-inch apertures. These too seem to be a good value, but because of the extra weight and size, they won't be as mobile as their little brother. It appears Meade found a good combination of cost and performance with this instrument.



The main finder scope is an 8x50 unit with a 5° true field of view. Two sets of three screws allow you to align the finder scope accurately.



Meade's AutoStar controller is easy to use, even in the dark. It contains a database of more than 30,000 celestial objects. You won't run out of things to look at for a long time.

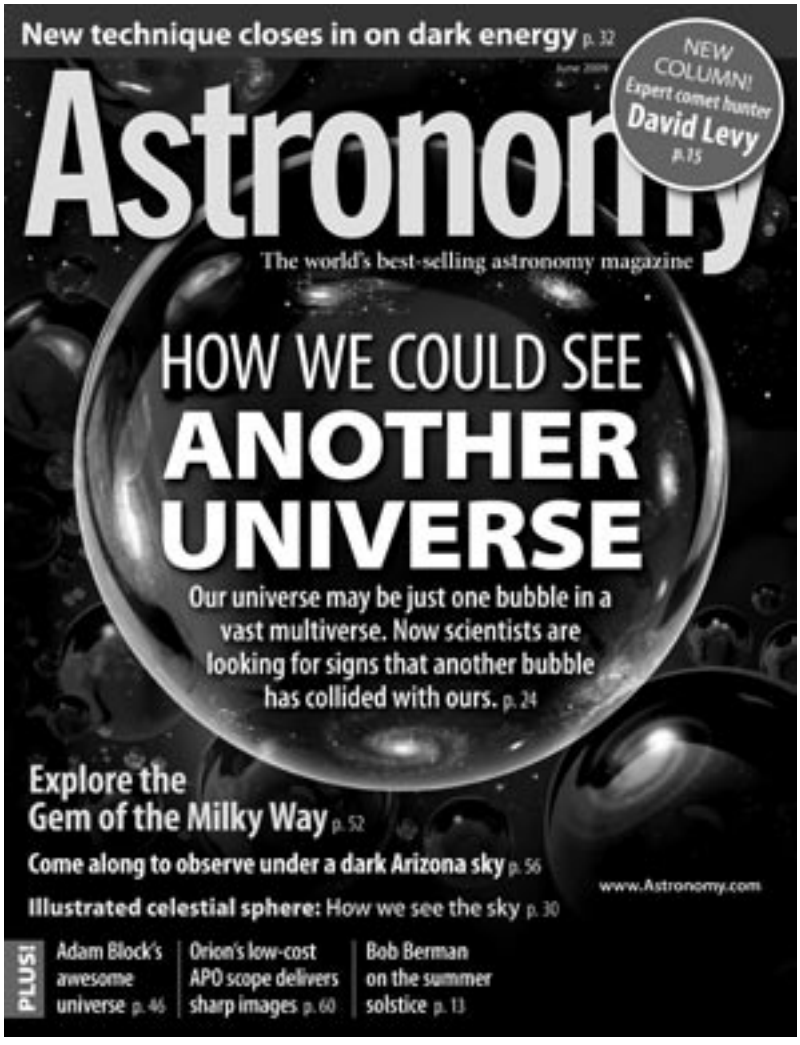


The main panel of the LX90-ACF has an input for Meade's AutoStar handbox controller, two auxiliary outputs to control add-on accessories, and a 12-volt input for an AC adapter.

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