MONTHLY OBSERVER'S CHALLENGE

Compiled by:

Roger Ivester, North Carolina

&

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June 2021

Report #149

NGC 5746, Edge-on Spiral Galaxy in Virgo

Sharing Observations and Bringing Amateur Astronomers Together

Introduction

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It's open to everyone who's interested, and if you're able to contribute notes and/or drawings, we'll be happy to include them in our monthly summary. Visual astronomy depends on what's seen through the eyepiece. Not only does it satisfy an innate curiosity, but it allows the visual observer to discover the beauty and the wonderment of the night sky. Before photography, all observations depended on what astronomers saw in the eyepiece, and how they recorded their observations. This was done through notes and drawings, and that's the tradition we're stressing in the Observer's Challenge. And for folks with an interest in astrophotography, your digital images and notes are just as welcome. The hope is that you'll read through these reports and become inspired to take more time at the eyepiece, study each object, and look for those subtle details that you might never have noticed before.

This month's target

William Herschel discovered NGC 5746 on 24 February 1786 with his 18.7-inch reflector. His handwritten journal reads:" Extremely bright, much extended in the parallel, 8 or 9 arcminutes long, bright nucleus."

A recent study by John Kormendy and Ralf Bender in the *Astrophysical Journal* presents NGC 5746 as a structural analog of our own galaxy. Both are "are giant, SBb–SBbc galaxies with two pseudobulges, i.e., a compact, disky, star-forming pseudobulge embedded in a vertically thick, 'red and dead,' boxy pseudobulge that really is a bar seen almost end-on." According to the authors, the lives of these galaxies have been dominated by minor mergers and bar-driven evolution for most of the history of the universe. They place NGC 5746 at a distance of 26.7 Mpc (87 million light-years).
https://ui.adsabs.harvard.edu/#abs/2019ApJ...872..106K/abstract

NGC 5746's V(V_T) visual magnitude is 10.32 ± 0.13, and its surface brightness is 12.6. The galaxy's visible extent through medium-size amateur telescopes under dark skies is in the vicinity of 7.4′ × 1.3′.

Uwe Glahn: Observer from Germany

Object: NGC 5746

Telescope: 16″ f/4.5 Newtonian reflector

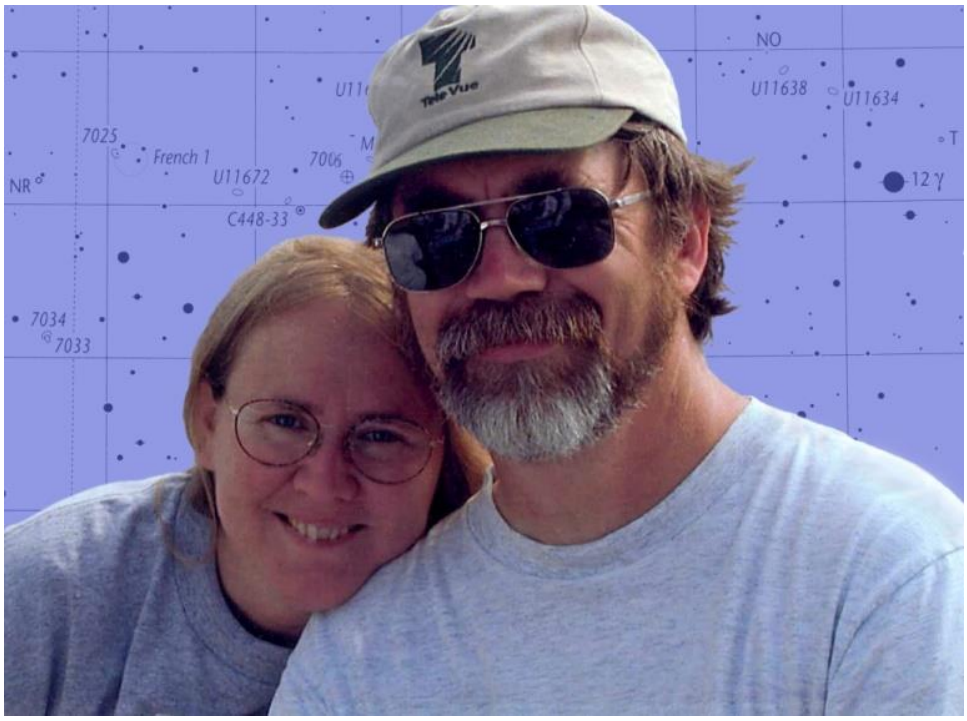
Magnification: 257×

NELM: fst 7.0+

Seeing: II

Sketch follows.

Sue French: Observer from New York



Conveniently located 20' west by north of the naked-eye star 109 Virginis, NGC 5746 appears as a highly elongated galaxy with a bright, elongated core when viewed through my 105/610mm (4.1-inch , f/5.8) refractor at 47×. The galaxy tips a bit west of north, and an arc of four stars, magnitudes eight to eleven, gently curves over its northern tip, the two brightest glowing as orange embers. When viewed at 87×, this slender galaxy spans about 4 arcminutes.

In my 254/1494mm (10-inch f/5.9) reflector at 115×, NGC 5746 is bright, fairly large, and very pretty, harboring a much brighter core. The smaller, dimmer galaxy NGC 5740 joins the scene. Its oval form leans north-northeast, is about half again as long as it is wide, and hosts a broadly brighter core,. Look for it 18 arcminutes south-southwest of its larger neighbor. At 166×, a dust lane lines the eastern side of NGC 5746's patchy-looking core.

NGC 5746 shows beautifully through my 381/1727mm (15-inch f/4.5) reflector at 247×. It covers about 6¼ × 1 arcminutes, and the dark lane along its eastern side is obvious by the sudden drop off in light. A bit of fuzz is visible east of the dark lane opposite the galaxy's core. A faint star is superimposed on the plane of the galaxy, about 2arcminutes in position angle 170° from the galaxy's center. At this point, clouds rolled in and covered the galaxy.

Glenn Chaple: Observer from Massachusetts

NGC 5746 – Edge-on Barred Spiral Galaxy in Virgo (Mag: 10.3, Size: 7.4′ × 1.4′)

Telescope aperture is a major factor in determining how difficult each monthly Observer's Challenge is. Under dark-sky conditions, our June Challenge–the 10th-magnitude, edge-on, barred spiral NGC 5746 in Virgo–would be an ultimate test for a common 2.4-inch (60mm) refractor and a piece of cake in a 10-inch (254mm) reflector.

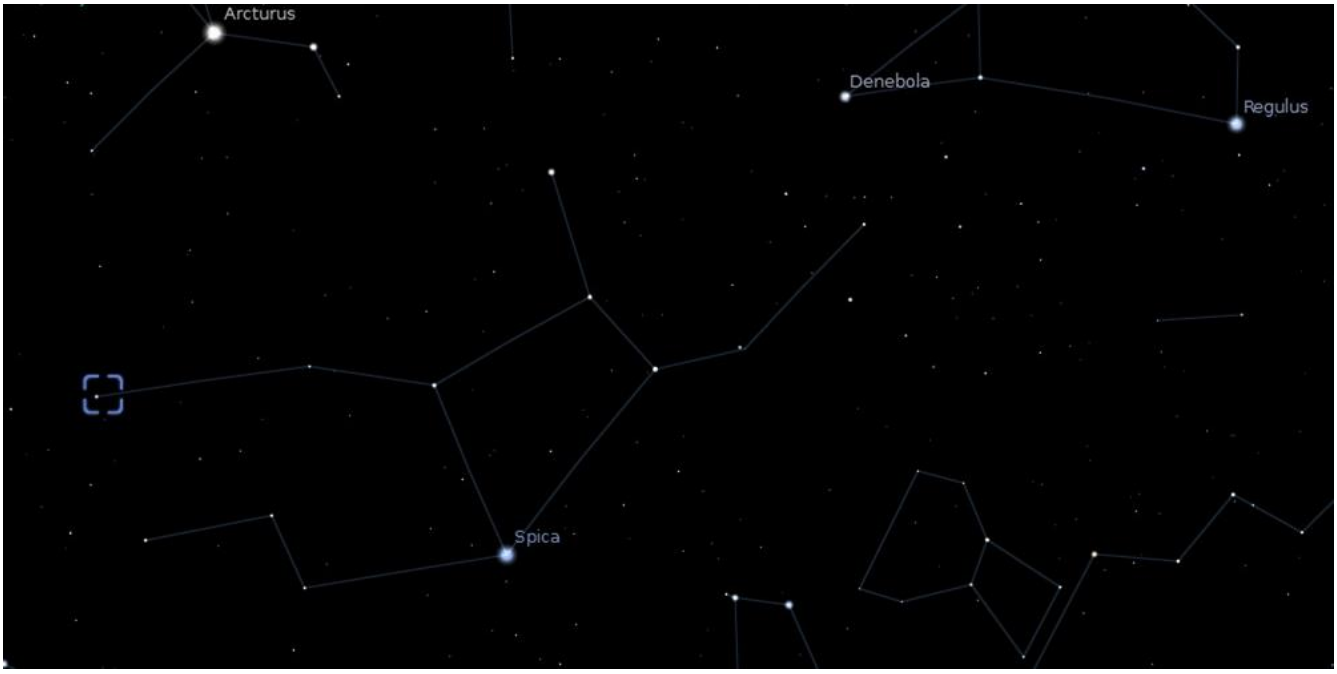
When considering the difficulty of any Observer's Challenge, you also need to factor in the ease with which it's located - particularly if you find your way by star-hopping. In this case, NGC 5746 is quite accommodating. It's just 20 arc-minutes (1/3 degree) west and slightly north of the 4th-magnitude star 109 Virginis.

NGC 5746 is a classic example of an edge-on spiral or barred spiral galaxy. It's comparable in visual splendor to the better-known Messier 104 (the Sombrero Galaxy), NGC 4565 (the Needle Galaxy), and NGC 891 (the Silver Sliver Galaxy). In Stoyan and Schurig's *Interstellarum Deep Sky Atlas*, NGC 5746 is labeled as the "Mini Sombrero Galaxy," All of these edge-ons are bisected by a distinctive dust lane, which appears particularly stunning in deep sky images.

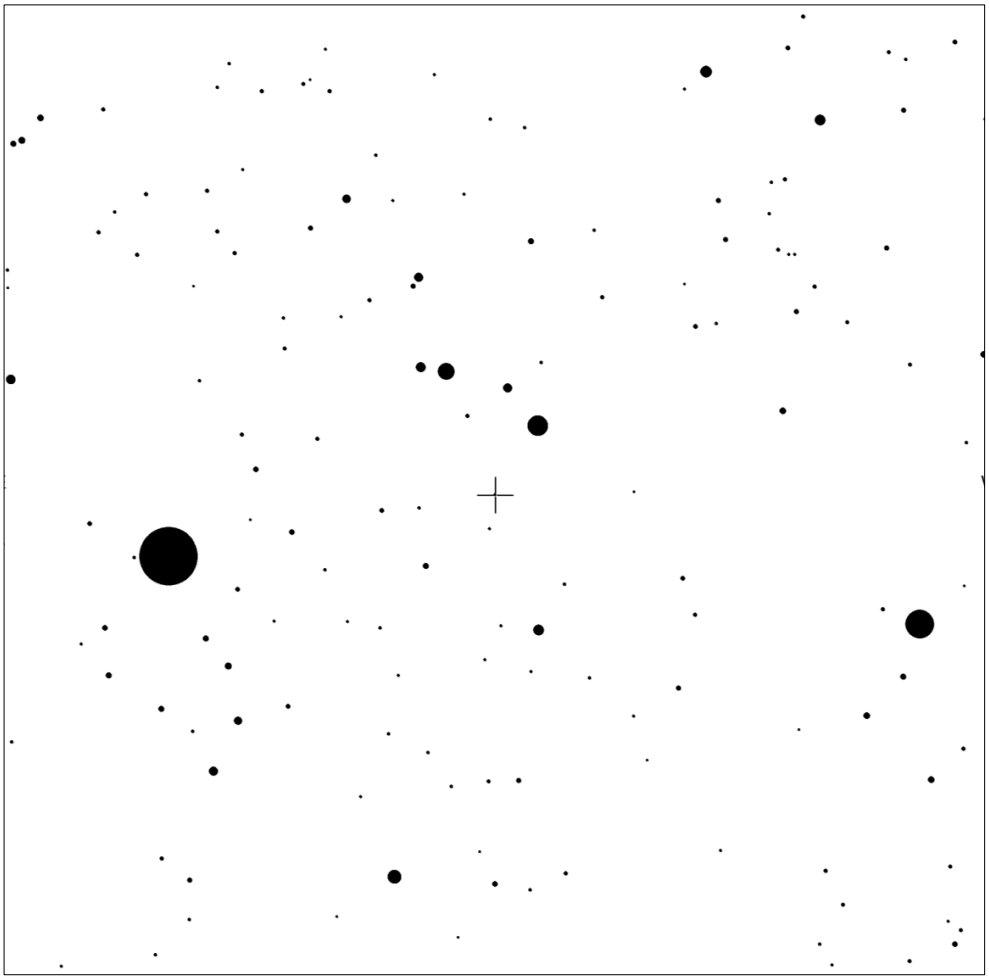
When I viewed NGC 5746 with a 10-inch f/5 reflector at 139× under magnitude-5 suburban skies, it appeared as an elongated 2- to 3-arcminute-long streak oriented roughly north-northwest to south-southeast. There was no sign of the galaxy's dust lane. Knowing exactly where to look and resorting to averted vision, I was able to glimpse NGC 5746 with a 4.5-inch f/8 reflector.

NGC 5746 was discovered by William Herschel February 24, 1786. Some 95 million light-years away, this huge galaxy spans 160,000 light years.

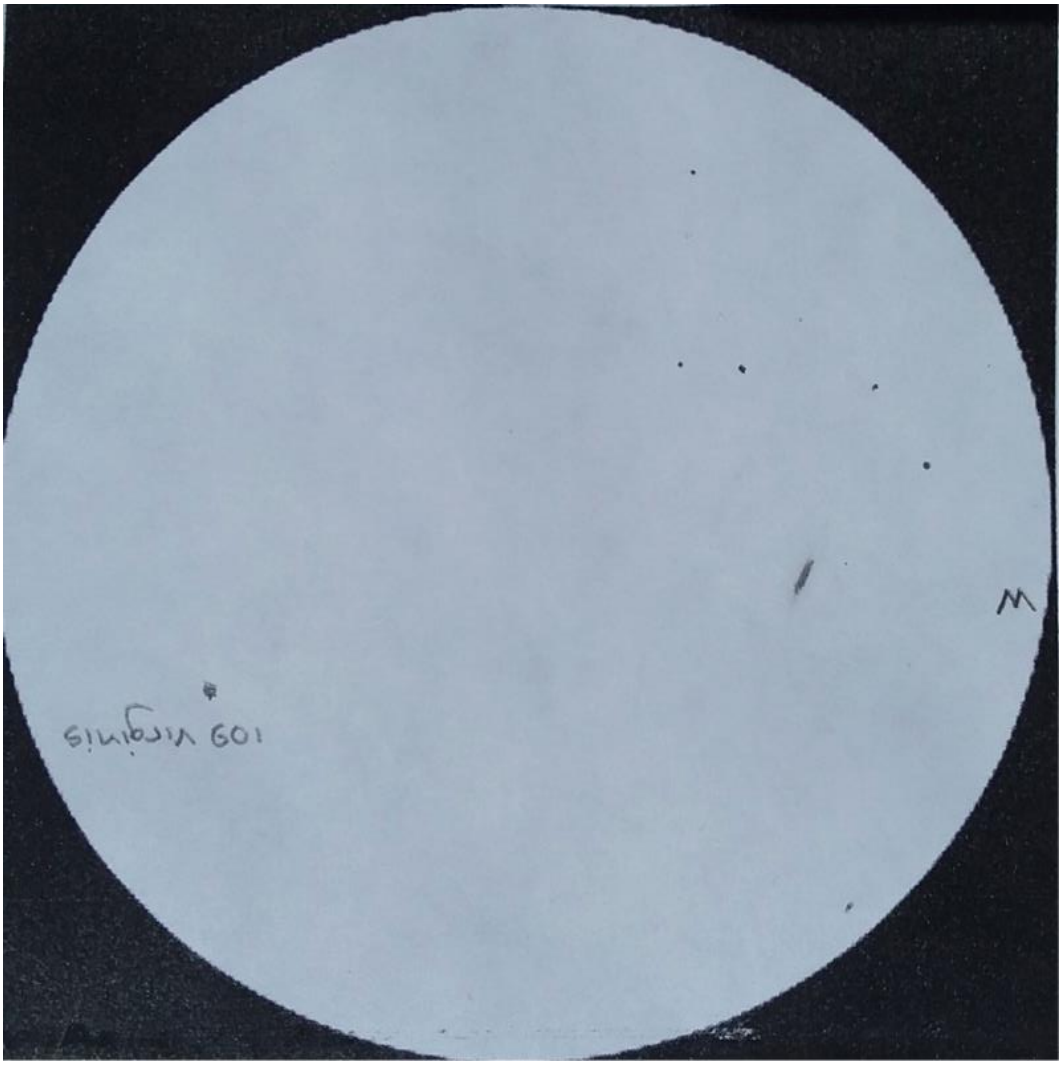
NGC 5746 Finder Charts



jwinman.com



VSO Variable Star Plotter (VSP) Stars to magnitude 14.5. One degree field, North is up.



(above) NGC 5746, as seen with 10-inch f/5 reflector at 139× under magnitude 5 skies. 0.6° field. North is up.

(below) For comparison - portion of above sketch showing same area as in Mario Motta's image.

Larry McHenry: Observer from Pittsburg, Pennsylvania

June: NGC 5746 – Galaxy – **Virgo**; Mag. V=10.3 sfc. br. 12.6; Size 7.4′ × 1.3′
RA: 14h 45m Dec. +01º 57′

NGC 5746 is located in the Spring constellation of Virgo – 'The Virgin', and is a barred spiral galaxy whose line-of-slight to us is nearly edge-on. The galaxy is about 95 Mly distant, and displays a prominent central dark lane both visually and photography that spans the entire length of the spindle.

Also visible is a bright round core contained within a square-shaped central bulge.

Image:

05/12/2021 from Big Woodchuck Observatory in Pittsburgh, PA.

Using an 8-inch SCT optical tube @ f/6.3 on a GEM mount, with a CMOS/USB color camera and LP filter @ 60-second guided exposure livestacked for 30 minutes.

Mike McCabe: Observer from Massachusetts

Man, was the day of June 10th, 2021 ever a long one for me! It began with alarm going off at 3 a.m. so that I could be on-site for our planned observation of the partial annular eclipse at sunrise. Arriving at the site an hour before sunrise allowed us to do some planetary observing for the first time this year, and the reward was great views of both Saturn and Jupiter, with the King of the Planets sporting the Great Red Spot front and center, and a sharp Io shadow transit to go along with it. The recently brightened V1405 Nova in Cassiopeia was attempted as well, but the morning twilight sky was a little too bright to support that observation.

Then came midday, when the Sun, now well clear of the Moon's silhouette, was sporting multiple active regions of its young Cycle 25 on vivid display in the Hα solar scope. One would think that would be enough observing for one day, but it wasn't going to stop there.

Nighttime arrived and the New Moon sky was pretty good for a summery June evening. I was tired, but I also wanted to take advantage of an opportunity to nab the June Observer's Challenge object, that being an interacting galaxy designated as NGC 5746 and located 95 million light-years distant in the constellation Virgo.

Visual magnitude estimates varied widely in the information I accessed about this target, and most indicated that the largest aperture I could wield on it would give me the best chance of actually seeing it. But I was tired and less than energetic at that point, so I just grabbed the most convenient setup available to me and put it out in the driveway. The lazy man setup was a recently acquired 120mm refractor on an alt/az mount. I wasn't expecting a lot.

To my delight the galaxy came into view fairly easily, albeit mostly as an averted vision object. The thing that brought me the most satisfaction with the experience was that I could clearly discern the orientation of the galaxy in the eyepiece. All in all it was a great day of observing, and I celebrated it with another hour under the stars, nightcap in one hand and binos in the other. Midnight came and went, and a new day was born.

Observation Log - Object: NGC 5746

Date Sun 10/21/z Time 22:50 /z EDT Local Observing Location 42°N 71°W

Scope/Aperture 120mm F8.3 Achro

Eyepiece 9mm Magnification 111x

Filter — Seeing 3/5 Transparency 2/5

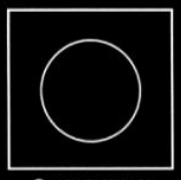
Temp 60°F Baro Pres. — Wind Calm

Comments:

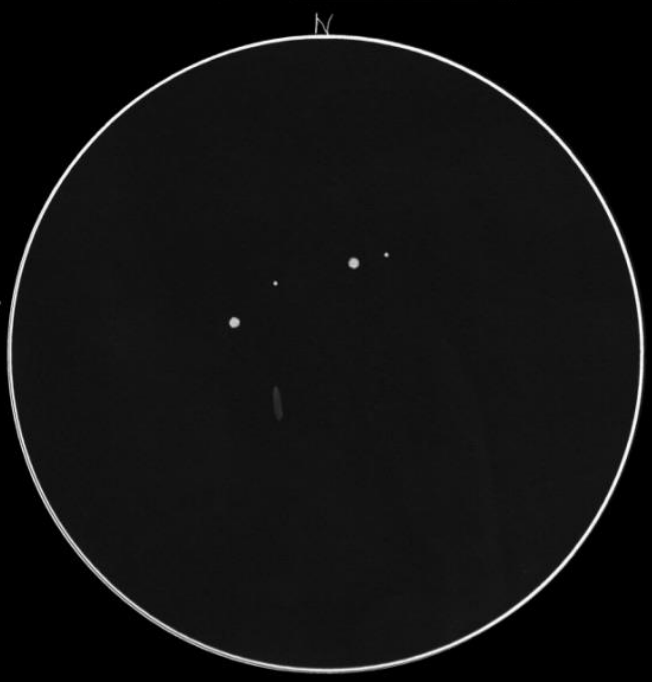
Very dim subject.

Tough target in the 120mm glass.

Pretty much averted vision only, but orientation clearly discerned.



Orientation and/or Rotation



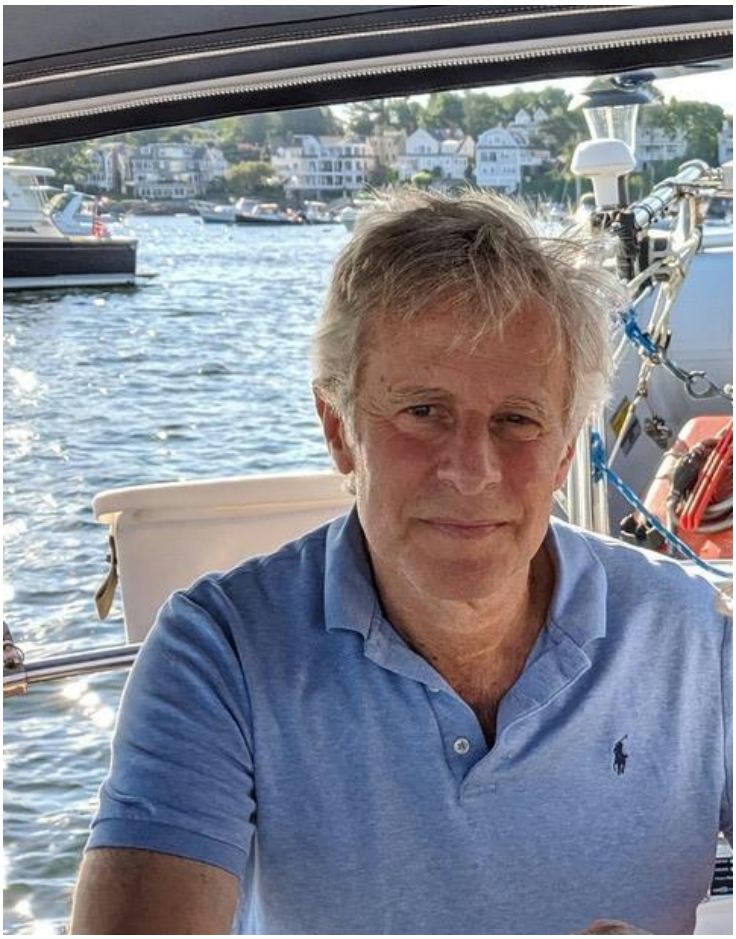
Mark Helton: Observer from Massachusetts

NGC 5746 was easy to find, but very tough to image. I find it amazing that this galaxy is about 95 million light-years from Earth. That is the farthest object, that I know of, that I've ever imaged! Time traveling!

I shot this with a 6-inch Newtonian scope on an equatorial mount. I used a ZWOASI533MC Pro camera, going into my MAC using ZWOASI Studio Capture software. I shot 45 minutes of 180 sec shots: 10 dark frames and 40 light frames stacked using Nebulosity 4 stacking software, and processed using Adobe Photoshop.

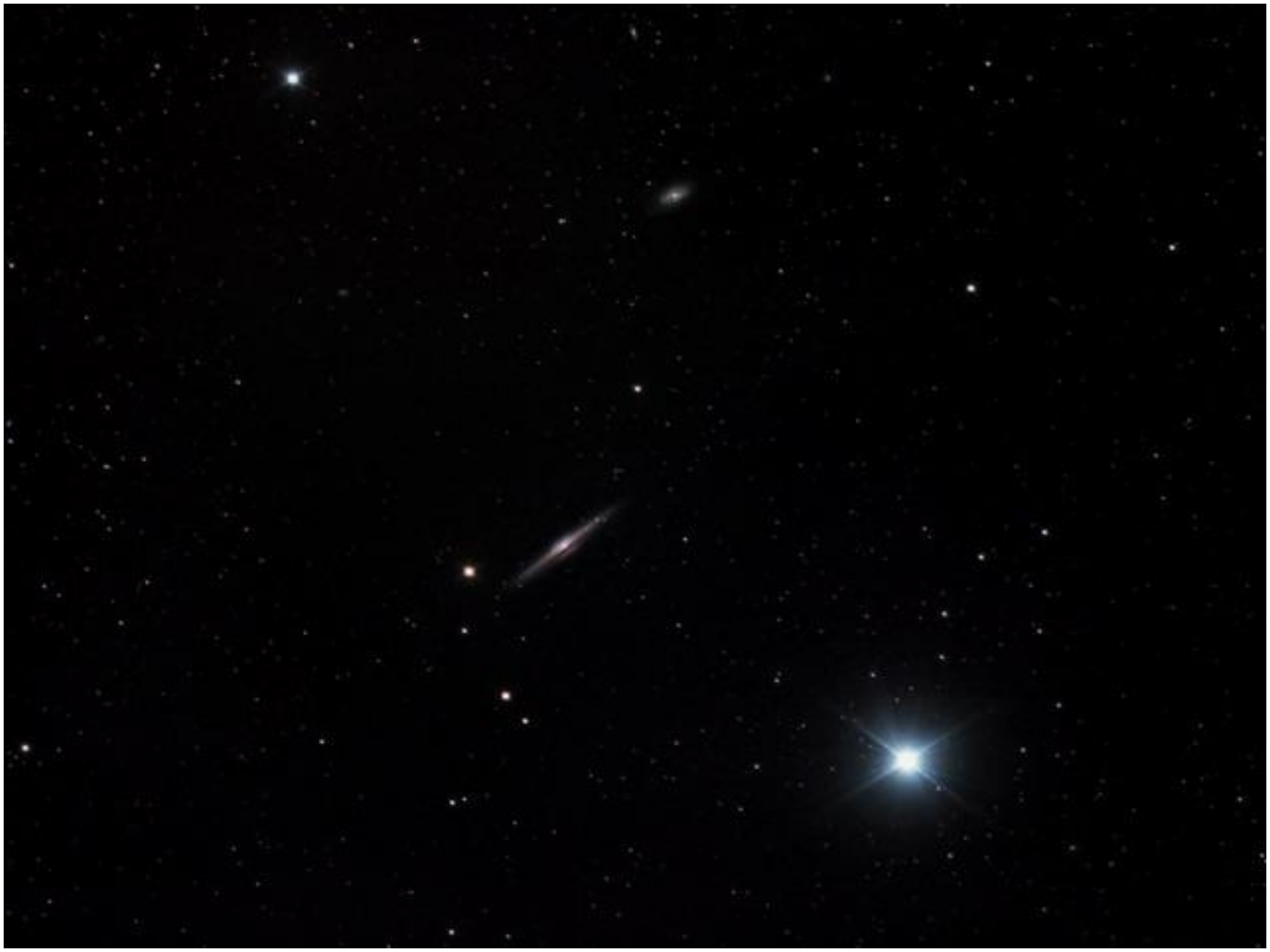
I've been into astronomy almost my entire 63-year-old life, but only became a serious astrophotographer in the last few years. I've been a professional TV director of Photography for more than 40 years. Now I've joined my love of astronomy with my love of cameras both still and video!

Barry Yomtov: Observer from Massachusetts



The June Observer's Challenge object is NGC 5746, which is an edge-on galaxy 95 Mly away. With the wide field of view fast optics of my RASA 11 additional object are seen. The nearby star 109 Virginis is a white-hued star which is 135 light-years away. Also seen is the NGC 5740 (18-arcminute FOV separation), a spiral galaxy which is about 80 Mly away. With Virgo's ocean of galaxies, a closer look at this image reveals at least 6 additional faint galaxies. This image, taken on May 11, is the result of 85 subs with 30-second exposures. Processing tools included DeepSkyStacker, PixInsight and Photoshop.

Image follows.



Mario Motta: Observer from Massachusetts

NGC 5746:

90 million light-years away. Taken with the 32 inch f/6.5 telescope, with ZWO ASI6200 camera, 3 hours, 1 hour each Red, Blue, Green, Processed CCD stack, PixInsight, and touch up Photoshop. Interesting that the core seems to have a "double hump".. thought processing issue, but.. it's in the professional images as well, ?? active core?.

James Dire: Observer from Illinois

NGC5746
By Dr. James R. Dire

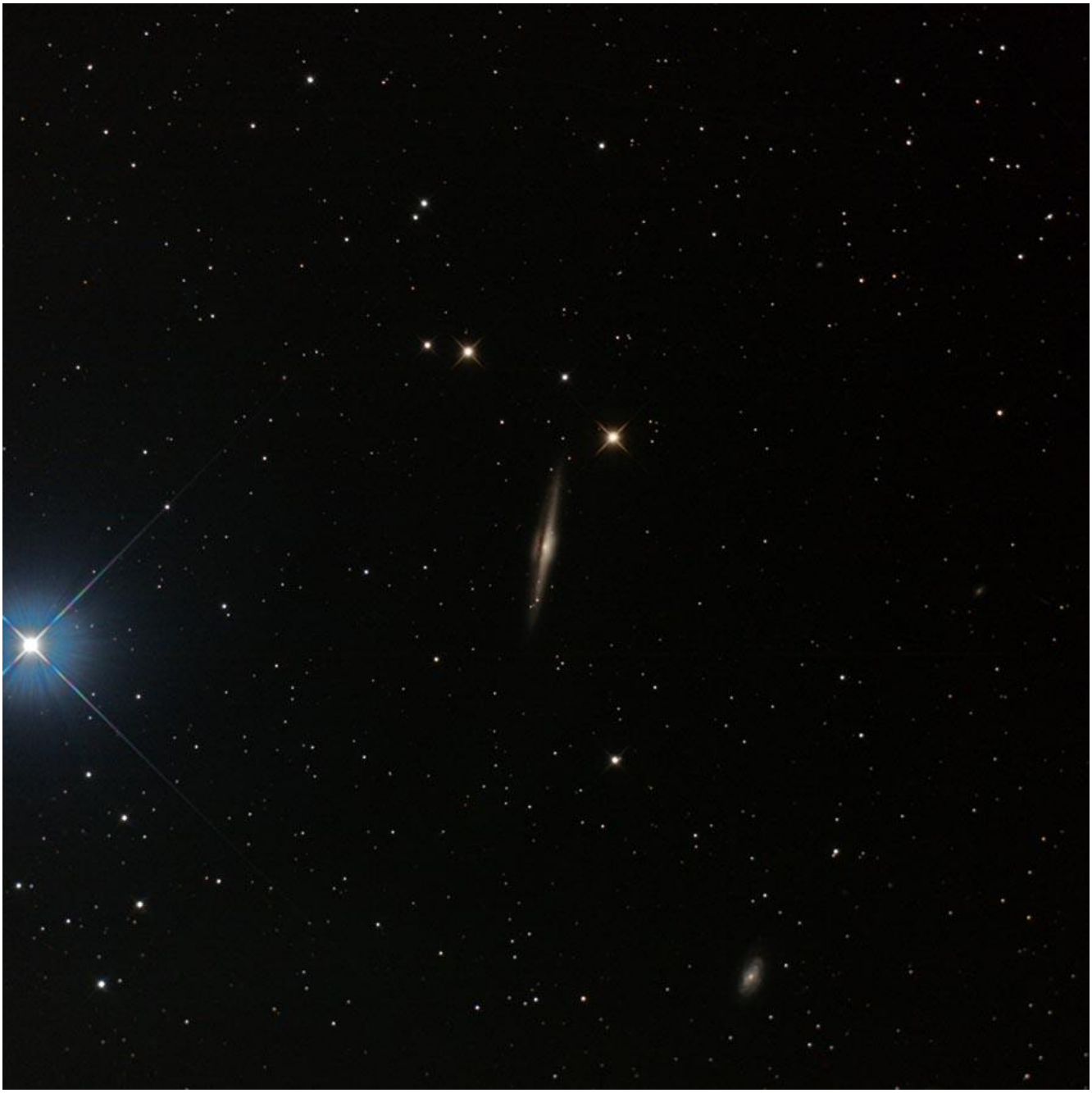
NGC5746 is an edge on spiral galaxy in the constellation Virgo. The galaxy is very easy to find since it lies a mere 20 arcminutes west of the magnitude 3.7 star 109 Virginis. NGC 5746 measures 7.2 by 1.1 arcminutes in size and has an integrated magnitude of 10.36. The galaxy is oriented north-south.

The galaxy looks like a smaller version of the Sombrero Galaxy. It has a bright star-like core with a faint disk extending on both sides with a dark dust lane blocking the eastern half of the galactic bulge.

I photographed NGC5746 with an 8-inch f/8 Ritchey–Chrétien Cassegrain (with a Tele Vue 0.8× focal reducer/field flattener yielding f/6.4) using a SBIG ST-4000XCM CCD camera. My exposure was 120 minutes using 10-minute subframes.

The image captures 109 Virginis and a smaller, almost face-on spiral galaxy, NGC5740. The smaller galaxy is magnitude 12 and measures 2.7 by 1.4 arc minutes in size.

Date/Location	May 8, 2021 Jubilee College State Park, Illinois
Camera and Settings	SBIG ST-4000XCM CCD camera
Telescope	8-inch f/8 Ritchey–Chrétien Cassegrain (with a Tele Vue 0.8× focal reducer/field flattener yielding f/6.4)
Mount	Paramount MyT
Exposure	120 min (12 × 10 min)
Processing	CCDOpts, Image Plus 6.5, Photoshop CS6
Other	Magnitude 10.4 spiral galaxy in Virgo, 7.2 × 1.1 arcmin in size. Smaller galaxy is NGC 5740, magnitude 11.9, 2.7 × 1.4 arcmin. Bright star is 109 Virginis magnitude 3.7.



Joseph Rothchild: Observer from Massachusetts

I observed NGC 5746 on May 12th from dark skies on Cape Cod with my 10-inch reflector. I tried to observe the object again in June, but the skies did not cooperate

NGC 5746 is a small edge-on galaxy easily located near 109 Virginis. It was readily apparent and best observed with a 14mm eyepiece at 102×. It had a central condensed core and tapered ends and a length to width ratio of about 5. No other structure was seen. This was my first observation of this object.

Anas Sawallha: Observer from Jordan

This month's target is indeed a very beautiful galaxy NGC 5746 in Virgo. With a 11.2 magnitude (NED). It is extremely easy to find, it is located just to the west of the star on the right foot of Virgo (109 Vir).

Back in June I tried to observe it from a Bortle 3-4 (?) sky however the seeing conditions were very bad, so I decided to give it another try yesterday 5/7/2021, and I was fortunate. The seeing conditions were perfect. I was able to glimpse some nebulas with the naked eye that I'd not been able to see on other nights.

The galaxy looked rather like a mini needle galaxy whose dust lane separated the central bulge unevenly. At low power (32×) I could not see it, but with a 12.4mm EP I could see it with averted vision, and could only see the western part of the divided bulge.

I tried the UHC filter but as expected it did not help as it had with other galaxies.

The observation and sketching were done:
From Kharaneh palace (Mwuaqqar)
5-inch Schmidt-Cassegrain telescope, 1000mm FL
And 12.4mm Meade Plössl
Under seeing condition (IV) and AOD 0.09.

Roger Ivester: Observer from North Carolina

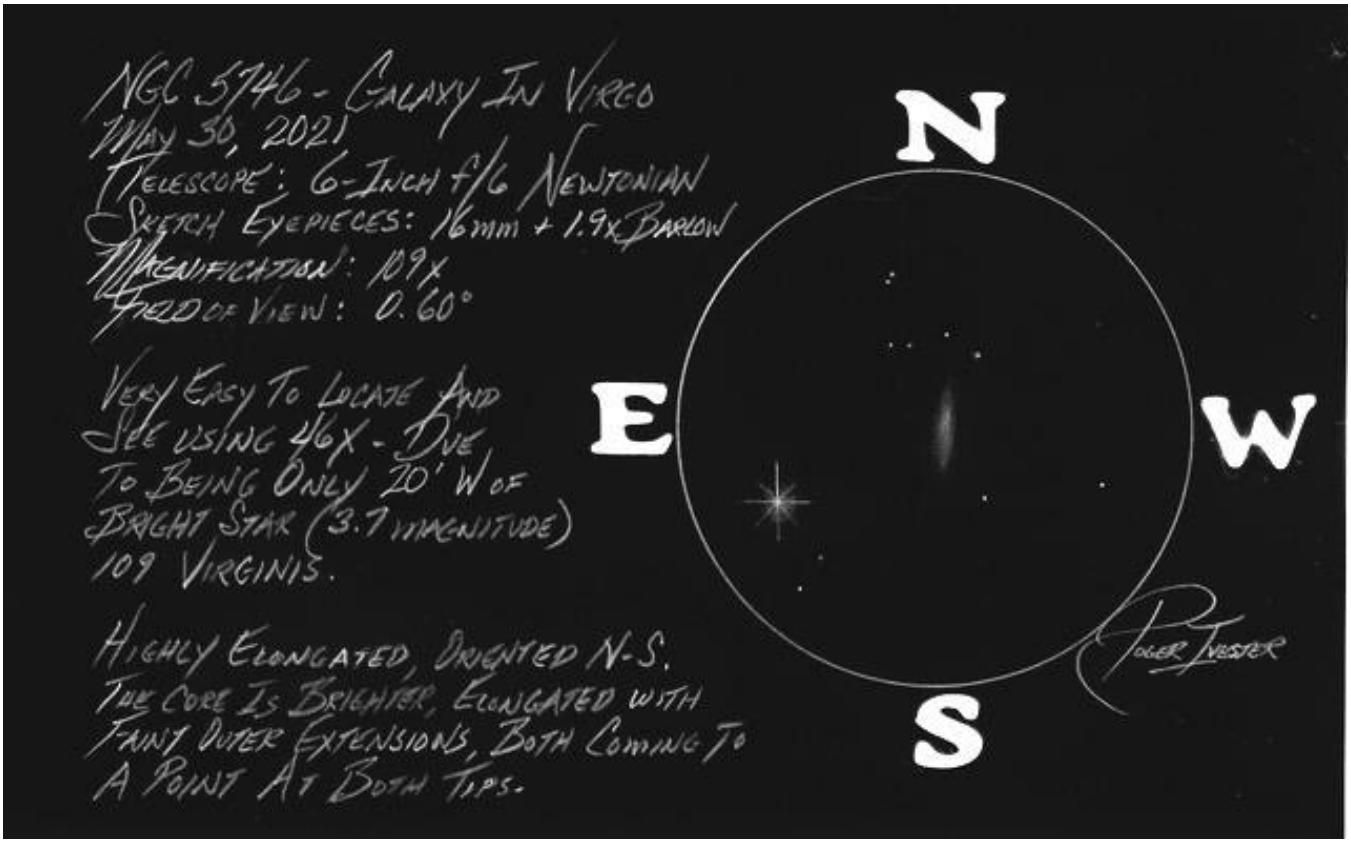
NGC 5746 – Galaxy in Virgo
Date: May 30, 2021
Telescope: 6-inch f/6 Newtonian
Sketch Eyepieces: 16mm + 1.9× Barlow
Magnification: 109×
Field of View: 0.60º

Very easy to locate and see using 46×, mostly in-part being only 20 arcminutes West of a bright star, 3.7- magnitude 109 Virginis.

My best view came at 109×, and presenting the galaxy as highly elongated, oriented almost perfectly N-S. The core is fairly bright and elongated with faint extensions, coming to a point at both the N and S tips.

For my sketch, I moved 109 Virginis out of the field of view, to reduce the extreme glare.

Sketch follows.



The following is the complete listing of all Observer's Challenge reports to-date.
https://rogerivester.com/category/observers-challenge-reports-complete/