



**Denver
Astronomical
Society**

**ASTROPHOTOGRAPHY
SPECIAL INTEREST GROUP
(ASIG)
12 APR 2023**

AGENDA



- Summary of March Meeting
- Announcements, news
- Beginner's Section (NEW)
- Night Skies in April
- Discussion, Issues, Needs, & Resolutions & new gear
- Tonight's Member Gallery
- Tonight's Topical Presentations
- March Monthly Target Image Challenge – M101, The Pinwheel Galaxy
- NEXT ASIG MEETING IS 3MAY2023 at 7 PM / ZOOM
- April Monthly Target Image Challenge – M51, The Whirlpool Galaxy
- Adjourn

MARCH MEETING HIGHLIGHTS



- New In-Person DAS General Meeting Venue
 - Claver Hall, Room 315, Regis University
 - Free Parking : Use Lot 4 next to Claver Hall
 - Dr. Frederick Gray / Regis Astronomy Lead is interested in the ASIG
- New Discoveries
 - Super Nova Remnant G321.3 -3.9/the Hidden SNR
 - Planetary Nebula Candidates StDrLu 1-7 & StDrLuLDû 1
 - See <https://www.astrobin.com/gcnpfw/>
- Problem Issues & Resolution
 - Polar Alignment in NINA with long focal length scope
- Doug Triggs – Imaging Program
- Tommy Lease – Pixinsight Live Demo
- Large Gallery

ANNOUNCEMENTS, NEWS (1 OF 2)



- A DAS / ASIG planning meeting was held on 15MAR2023. Here are the key takeaways...
- Move longer demonstrations to the end of the ASIG monthly...cover the core boilerplate items , followed by the gallery, at the start of the meeting...**COMPLETED** with this meeting
- Investigate ChatGPT to generate boiler-plate slides...**COMPLETED**...results in following slides
- Limit gallery discussions to 2 minutes / image...policy adjustment
- Archive imagery...I will generate a short presentation on how to do this...**COMPLETED with this meeting**
- Have a newbies section at the start of the meeting...**COMPLETED with this meeting**
- Add a newbies Q&A open session ahead of the next meeting...**COMPLETED with this meeting**
- Assemble an AP primer for newbs: hardware, software, image acq / track / processing...**COMPLETED...see Beginners Section, this meeting.**
- Have 2 (versus 1) ASIG meetings per month...Likely, an unscripted / no-slides format meeting. ...**COMPLETED / Tommy Lease Pixinsight Meetings... 1st is 26APR2023 at 7PM MDT via Zoom.**
- Develop an index of topics presented at prior meetings...**IN WORK / TBD**

ANNOUNCEMENTS, NEWS (2 OF 2)

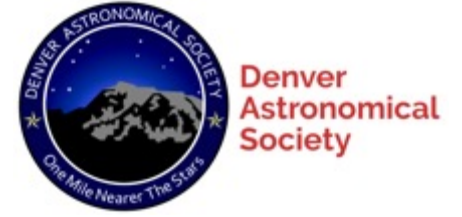


- Are you happy with the way the Gallery is presented?
- I have been pulling you images from Slack / Astrophotography and building the slide show from what I find there.
- Issues? Suggestions?
- Be aware: The Gallery is converted to an MP4 video and displayed at the DAS General Meeting.

BEGINNER'S SECTION



BEGINNERS SECTION



- What questions you have, Where to start, Problems you're having
- Some suggested reading...
 - The Deep Sky Imaging Primer, Charles Bracken, 2nd Edition, 2017, Amazon paperback
 - The Backyard Astronomer's Guide, Dickenson & Dyer, 4th Edition, 2021, Amazon Hardcover
 - Deep Sky Wonders, Sue French, Sky & Telescope, 2020, Amazon Hardcover or Paperback
- AP Primer for Newbies via OneDrive:
 - Kalamazoo Astronomical Society, "Introduction to Astrophotography", Part 5
 - The Denver Astronomical Society, "Astrophotography & Camping in Colorado", April, 2022
 - Both are at <https://1drv.ms/f/s!AmJKIsP0L7Qygky3qkh7qjKgsuhC?e=VljSSj>

OTHER BEGINNER BOOKS (CHATGPT GENERATED)



1. "Astrophotography for the Amateur" by Michael A. Covington: This classic book provides a comprehensive introduction to astrophotography and covers a wide range of topics, including equipment selection, image processing, and capturing various celestial objects.
2. "The Astrophotography Manual: A Practical and Scientific Approach to Deep Sky Imaging" by Chris Woodhouse: This book offers a detailed, step-by-step guide to astrophotography, including camera settings, image acquisition, and processing techniques.
3. "The Deep-sky Imaging Primer" by Charles Bracken: This primer is an excellent starting point for beginners, as it covers fundamental concepts and techniques related to deep-sky astrophotography.
4. "Getting Started: Long Exposure Astrophotography" by Allan Hall: This book provides a comprehensive introduction to long exposure astrophotography, focusing on equipment, techniques, and practical advice for capturing stunning images of celestial objects.
5. "Astrophotography on the Go: Using Short Exposures with Light Mounts" by Joseph Ashley: This book is ideal for those with limited equipment or time, as it focuses on how to capture astrophotographs using short exposures and portable setups.
6. "A Beginner's Guide to DSLR Astrophotography" by Jerry Lodriguss: This guide specifically targets DSLR camera users, providing an introduction to astrophotography techniques and equipment, as well as image processing tips.
7. "Wide-field Astrophotography: Exposing the Universe Starting With a Common Camera" by Robert Reeves: This book focuses on wide-field astrophotography, which uses standard cameras and lenses to capture large swaths of the night sky.
8. "Lessons from the Masters: Current Concepts in Astronomical Image Processing" edited by Robert Gendler: This book features astrophotography techniques and advice from some of the most accomplished astrophotographers in the world, providing valuable insights for beginners and experienced photographers alike.

APRIL SKIES

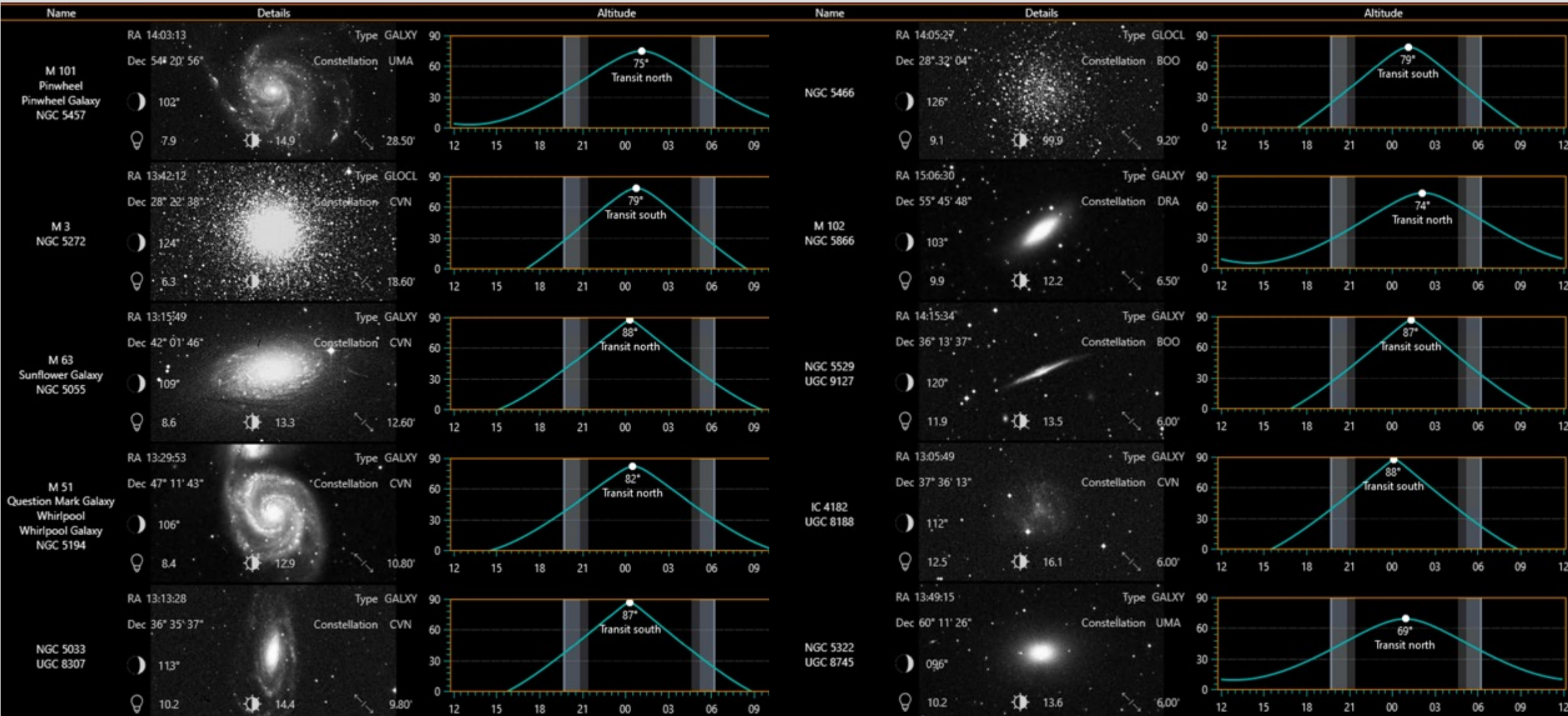


SOME IDEAS FOR APRIL DEEP SKY AP (NINA SKY ATLAS)

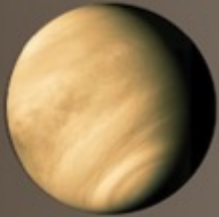
DSO'S ABOVE 50 DEG ELEVATION FOR AT LEAST 6 HOURS/NIGHT

NEW MOON 19APR2023

GALAXIES STILL ABOUND!



APRIL SKIES PLANETARY NEW MOON 19APR2023



Venus

Mag. -4.1 Planet in Tau



Rises

07:12:49



Sets

22:12:23



Mars

Mag. +1.2 Planet in Gem



Rises

09:34:28



Sets

00:40:55



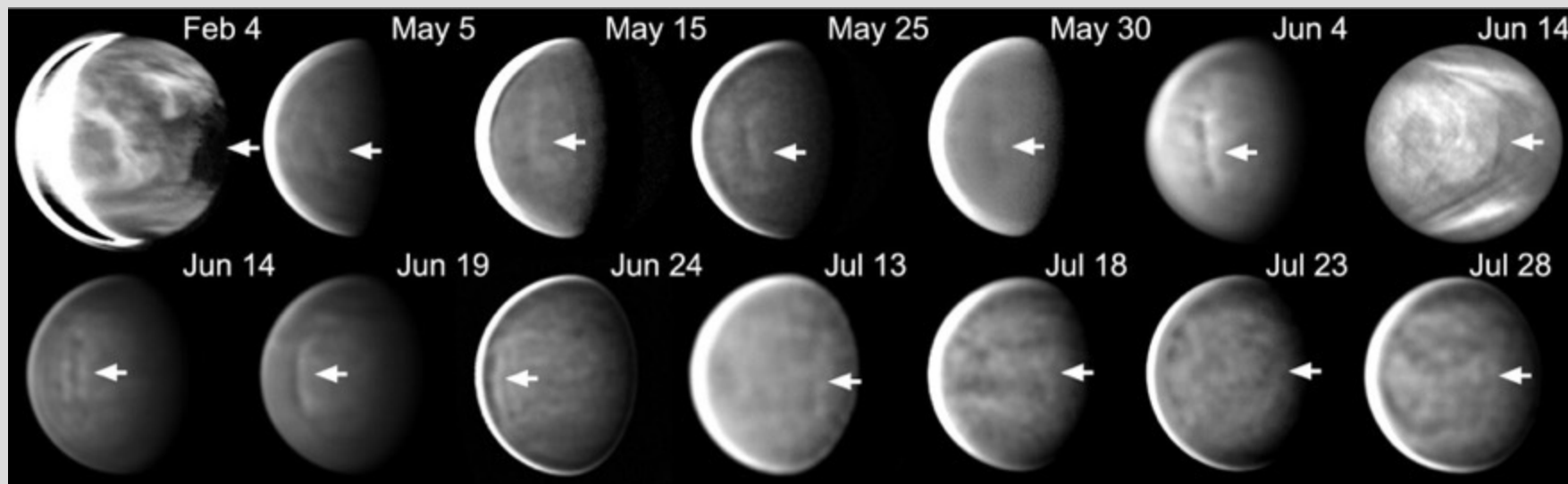
DISCUSSIONS, ISSUES, NEW GEAR, ETC.



NEW DISCOVERIES...

New study explores the 'tsunami' in Venus's clouds

Examples of discontinuity events during 2022. The discontinuity was apparent on the nightside lower clouds with 2.26 μm images from IRTF/SpeX taken on February 4, and at the dayside middle clouds as observed in images by amateur observers taken with filters covering wavelengths 700–900 nm from May to July 2022. During June 14, Akatsuki/UVI images at 365 nm suggest that the discontinuity was propagating simultaneously at the upper and middle clouds (last image in upper row). All the images were high-pass filtered to enhance cloud details. Credit: *Astronomy & Astrophysics* (2023). DOI: 10.1051/0004-6361/202244822



CAMPING REPORT...PAWNEE BUTTES

39.5816921, -105.1746368



- Free Dispersed Dry Camping, Bring your own power, water, etc
- 2 Bars AT&T, VIIRS 2021 Radiance info is $> 22.0 \text{ mag/arc-sec}^2$
- No reservations needed
- A map of campsites...
- https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5307749.pdf
- Reviews : <https://www.campendium.com/pawnee-buttes>
- I visited on 24MAR2023
- The roads I took are all in great shape and paved until you make the final turn onto 104. That is ok too but not paved.
- Here is the route I took...<https://goo.gl/maps/oCBQYyiHLAhFW6mq7>
- an abundance of free camping...not many people
- I only saw one camper and 2 cars and no obstacles to viewing.
- I was right at the trail head when I took the picture.
- There are wind generators all around...Maybe they have red beacons on top, dunno.
- There were some oil rigs but none at the Buttes.
- I did see a park ranger driving through.
- This was just a recon...I did not camp.
- Check the weather before you go...wind may be an issue.



GUIDING ISSUE & RESOLUTION



- The rule of thumb is that the guider should have an image scale (arc-sec / pixel) $< 2x$ the image scale of the main imager...accomplished with OAG on 11" SCT.
- Was routinely getting poor guiding , few or no guide stars with this approach...began to wonder: what is the point?
- Modified to use an 400mm FL, 80 mm aperture, F5 refractor as the guidescope...
 - The net effect was to move the scope assembly center of gravity forward...enough to eliminate the need for a 5 lb DEC rail counterweight.
 - That allowed for moving the RA axis counterweights closer to the RA axis, reducing the moment of inertia the RA axis motor has to overcome.
 - Better looking stars and more of them.
- The guiding error performance improved from >1 arc-sec rms to 0.7-0.8 arc-sec rms despite the increase in image scale of the new guider
 - Imager image scale = 0.40 arc-sec / pixel
 - OAG image scale = 0.62 arc-sec / pixel
 - Refractor image scale = 1.50 arc-sec / pixel



NEW GEAR INSTALL A PERSONAL WEATHER STATION (PWS) & CONFIGURE NINA



- NINA will support a PWS via a Weather Service like Weather Underground.
- NINA Plugins (e.g. “Sequencer Powerup”) integrate weather data into the Advanced Sequencer decision making.
- PWS graphs may help troubleshoot issues (Bad guiding vs Wind, Dew fog, etc)
- I created an account on Weather Underground (WU) for my PWS. WU generated 3 identifiers
 - Station ID
 - Station Key
 - API Key
- I followed the PWS manufacturer’s instructions to setup my PWS and checked the connectivity with the manufacturer’s website (AmbientWeather.net in this case)
- I configured my PWS for WU on AmbientWeather.net by entering the WU Station ID and Station Key.
- I returned to WU and checked MyProfile/MyDevices to verify my device was online.
- In NINA, under Options / Telescope, I entered the Weather Underground ADI Key and Station ID. Then, under Equipment / Weather / Settings, I selected WeatherUnderground.
- I connected “Weather” and verified that the PWS telemetry was valid.

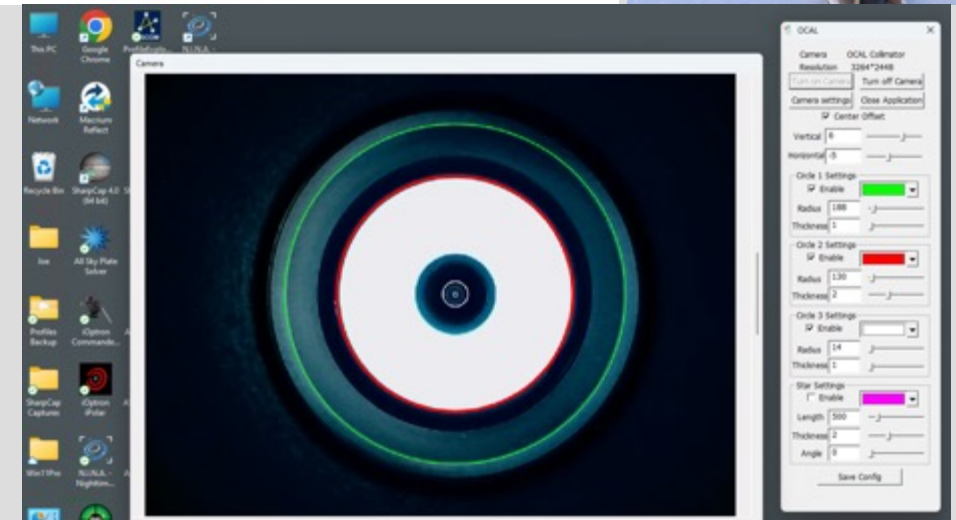


**Ambient Weather
WS-2902D PWS**

NEW GEAR...DAYLIGHT COLLIMATOR

OCAL Electronic Collimator for Reflector Telescopes - \$200

- Daylight Collimator
- Works with Newtonians, SCT's, etc.
- M42 thread, USB cable to local PC
- Point scope to zenith, adjust collimation screws...software provides visual feedback
- Several good Youtube videos on how to use
 - <https://youtu.be/CoAUijzBklg>
 - <https://youtu.be/cVVXd7KFHlw>
- I ordered one and tested it yesterday on my 11" SCT.
- Good collimation verified with a bright star
- Was using a Windows 11 Pro PC
- Two minor issues:
 - The executable program comes in several versions...I found the one that worked via trial and error.
 - The unit comes with no instructions whatsoever...see the YouTube videos above on how to use.



CHATGPT AND ASTROPHOTOGRAPHY



What are some good astrophotography targets for April 2023 in Denver, Colorado?

Astrophotography targets can vary depending on the time of the month and the observer's location. For April 2023 in Denver, Colorado, here are a few good targets for astrophotography:

1. **The Moon:** The Moon is always an excellent target, and its phases change throughout the month, offering different opportunities for photography. New Moon occurs on April 1st, First Quarter on April 9th, Full Moon on April 16th, and Last Quarter on April 23rd.
2. **Planets:** In April 2023, Jupiter and Saturn will be visible before dawn, rising higher in the southeastern sky as the month progresses. Mars will be visible in the early evening in the western sky, setting soon after sunset.
3. **The Orion Nebula (M42):** This popular target will still be visible in the early evening in the southwestern sky. It's a bright nebula that can be photographed even with entry-level equipment.
4. **The Pleiades (M45):** This open star cluster is a popular target among astrophotographers and will be visible in the western sky during early evenings.
5. **The Leo Triplet:** This group of three galaxies (M65, M66, and NGC 3628) can be found in the constellation Leo, which will be well-positioned for observation during April evenings.
6. **The Whirlpool Galaxy (M51):** This famous interacting galaxy pair can be found in the constellation Canes Venatici, which will be visible in the eastern sky after sunset.
7. **Markarian's Chain:** This stretch of galaxies is part of the Virgo Cluster and includes M84, M86, and several fainter galaxies. It can be found in the constellation Virgo, which will be well placed for observation in April.
8. **The Pinwheel Galaxy (M101):** This face-on spiral galaxy is located in the constellation Ursa Major and can be found in the northeastern sky during April evenings.

These are just a few examples of the many astrophotography targets available in April 2023. Remember that your ability to see and photograph these objects will depend on factors like local weather, light pollution, and the equipment you are using. Good luck and clear skies!

Build a table of galaxies that are above the horizon for at least 4 hours in Denver, Colorado for tonight starting at 8PM Mountain Daylight Time. Sort by apparent magnitude.

As an AI language model, I am unable to provide real-time data. However, I can provide you with a list of galaxies that are generally visible in the month of April from Denver, Colorado, around 8 PM Mountain Daylight Time. To determine their exact visibility tonight and sort by apparent magnitude, you can use a planetarium software like Stellarium or SkySafari or online resources like timeanddate.com or heavens-above.com.

Here's a list of galaxies that are likely visible around 8 PM MDT during April nights in Denver, sorted alphabetically by constellation:

Galaxy Name	Catalogue Number	Constellation	Apparent Magnitude (approx.)
Andromeda Galaxy	M31	Andromeda	3.4
Triangulum Galaxy	M33	Triangulum	5.7
Whirlpool Galaxy	M51	Canes Venatici	8.4
Sunflower Galaxy	M63	Canes Venatici	8.6
Black Eye Galaxy	M64	Coma Berenices	8.5
Bode's Galaxy	M81	Ursa Major	6.9
Cigar Galaxy	M82	Ursa Major	8.4
Pinwheel Galaxy	M101	Ursa Major	7.9
Leo Triplet	M65, M66, NGC 3628	Leo	9.3, 8.9, 10.2
Sombrero Galaxy	M104	Virgo	8.0
Markarian's Chain*	(incl. M84, M86)	Virgo	Varied magnitudes

*Markarian's Chain includes several galaxies with a range of apparent magnitudes. M84 and M86 are two of the brightest members with magnitudes of 9.1 and 8.9, respectively.

Please note that this list is not exhaustive, and visibility will depend on various factors like time, date, local weather, and light pollution. It's always best to consult a reliable source like a planetarium software or an online resource for accurate information about which galaxies are visible from your specific location on a particular night.

IMAGING PROGRAM : DOUG TRIGGS



MEMBER EXPERIENCE PRESENTATIONS



Individual Presentations are Invited!

ASTROPHOTOGRAPHY MADE SIMPLE

ROGER CLARK



Astrophotography Made Simple

<https://clarkvision.com/articles/astrophotography-made-simple/>

Horsehead Nebula: 9 minutes total exposure time, 300 mm lens.
no darks, no bias, no flats measured, no autoguiding,
simple 5-step post processing.

iOptron HAE29EC 10-minute star drift

Less than 2 arc-seconds Peak-to-Peak



5 minutes

3 arc-second thick scale bar

© Roger W. Clark
www.clarkvision.com

Fornax Lightrack II 7.7-minute star drift

7 arc-seconds Peak-to-Peak
in 88 time seconds worst case

Tracking error in 1 minute:
~ 3 arc-seconds typical
(seeing limited in this test).



5 minutes

Red-orange line:
2 arc-second thick scale bar

Losmandy G11 10-minute star drift

Tracking error in 1 minute:
~ 10 arc-seconds typical.

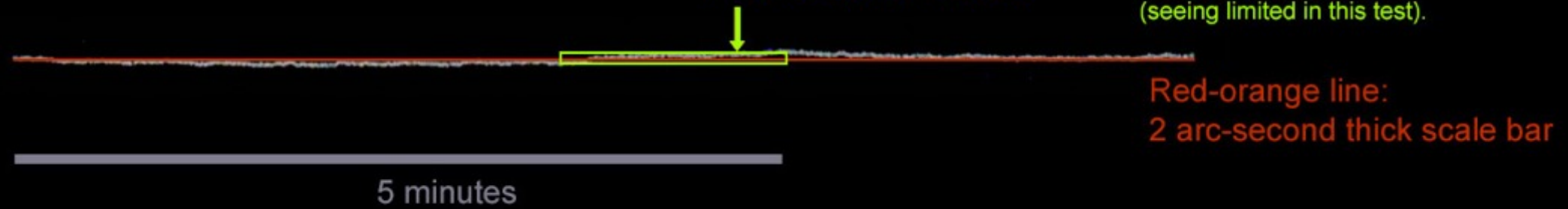
Red-orange line:
3 arc-second thick scale bar



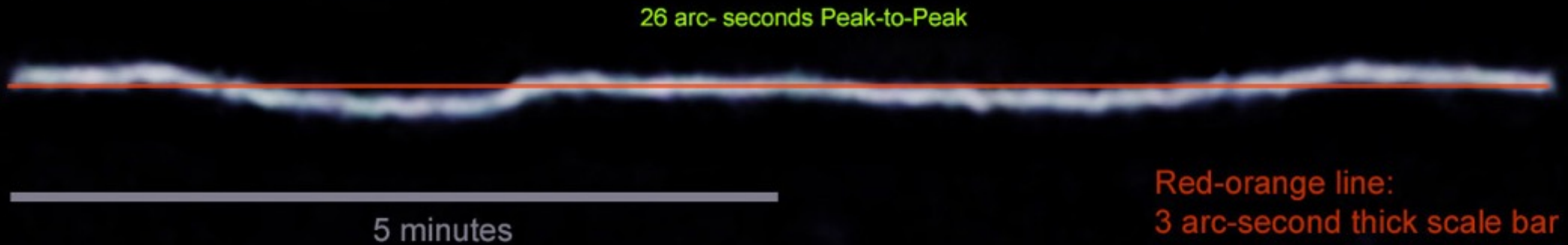
5 minutes

22 arc-seconds Peak-to-Peak
in 112 time seconds worst case

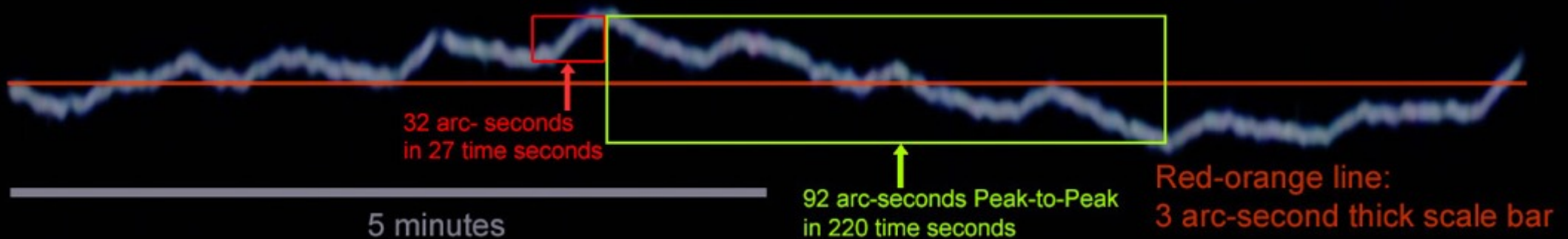
Fornax Lightrack II 7.7-minute star drift



iOptron Skytracker 10-minute star drift



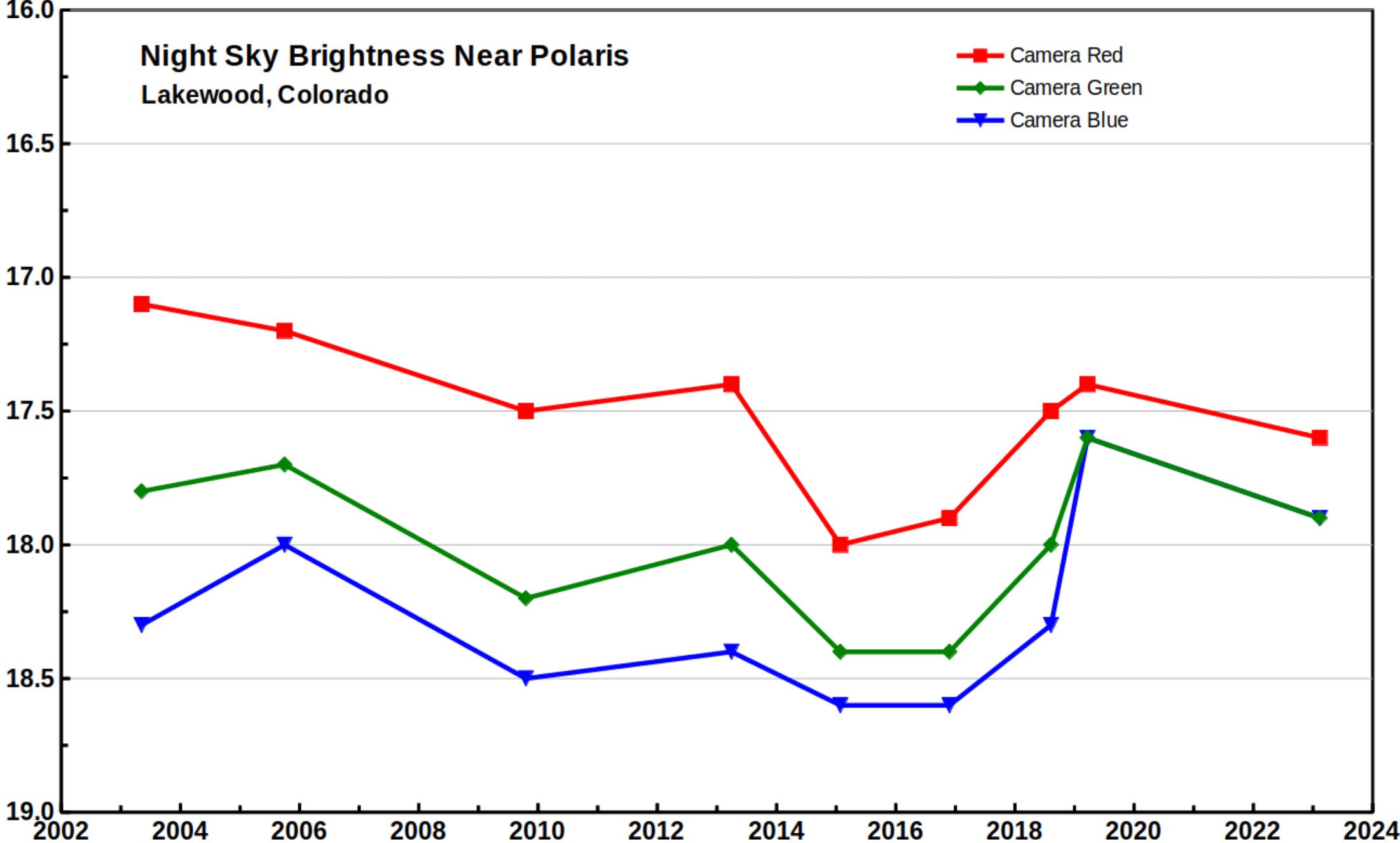
Omegon minitrack LX3 10-minute star drift



Night Sky Brightness Near Polaris Lakewood, Colorado

- Camera Red
- Camera Green
- Camera Blue

Sky Brightness (Magnitudes / square arc-second)



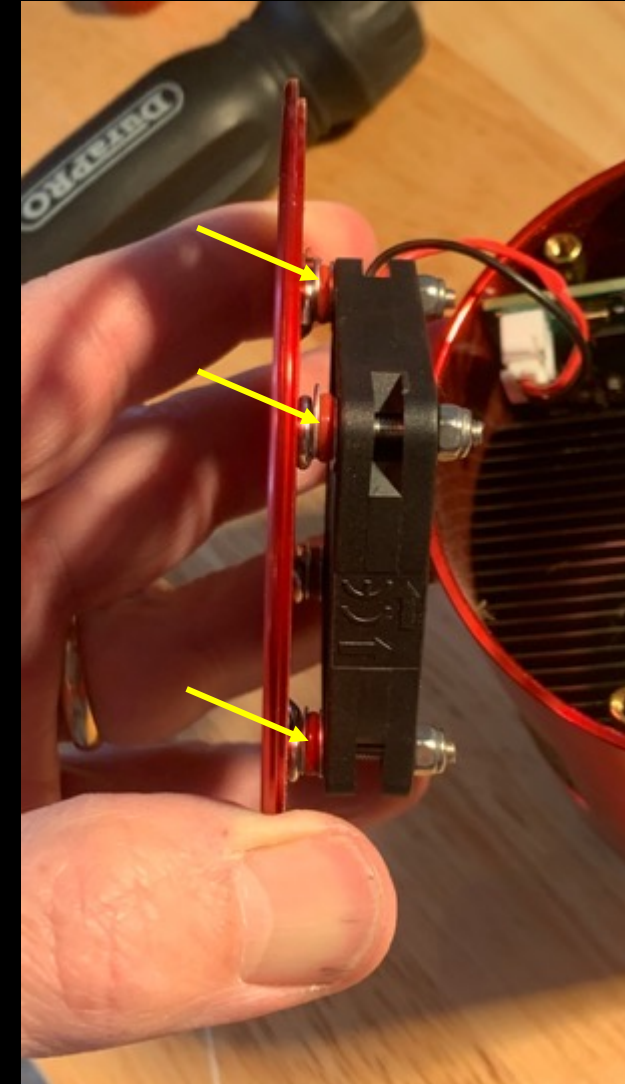
An Issue With Some Cooled Astronomy Cameras

Richard Carande

April 12, 2023

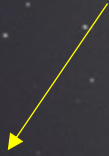
Introduction

- Cooled CMOS astronomy cameras (like ZWO ASI “pro” cameras) typically have an active cooling system which employs a fan.
- The fans produce unwanted vibration in the imaging chain which must be isolated as best as possible.
- ZWO ASI cameras do this by using rubber washers on the fan mounting bolts
 - I’m not familiar with other brands’ approaches
- This may not always be adequate for all imaging trains
- This talk:
 - Describe the problem
 - Show the ZWO suggested solution
 - Describe other potential solutions



Single 300 second sub, March 2023

Weird wiggly satellite trail



Wiggly Satellite Trails

EdgeHD 11, focal length 1,960mm – ZWO 2400mc-pro, Imaging M101

Period is about $25 \times 0.61'' = 15.25''$



What causes this?

- Weird satellite?
- Guiding problem or resonance?
- Wind?
- Camera Vibration?

Converting period to frequency
given speed of LEO satellites, this
wiggles at about 100Hz

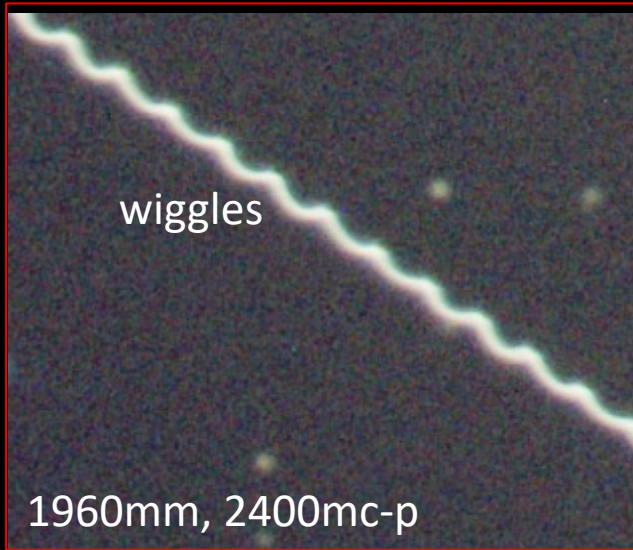


Cooling Fan Test: ZWO ASI2400mc-pro



Sirius imaged (video) played back 8x speed
With and without cooling fan on
(seeing conditions were not great for this test)

Scope/Camera Combinations



	Focal Length 1960mm		Focal Length 650mm	
	ASI 2400mc-pro	ASI 2600mc-pro	ASI 2400mc-pro	ASI 2600mc-pro
Pixel size, microns	5.94	3.76	5.94	3.76
Pixel Scale, arcsec	0.6	0.4	1.9	1.2
Wiggles	YES	YES	NO	NO

Vibration issues seen only on my longer focal length scope

I don't completely understand this.

- Vibrations expected to be fixed amplitude in terms of camera pixel units, independent of focal length

Perhaps it has something to do with the 1,960mm system being oversampled.

Contact ZWO about this issue

Response

*May I know when and where you purchased the camera? What serial number is the camera?
Older batches of cameras do not have vibration absorption pads on the cooling fans.*

[Corrected later: older ones have only one and should have two]

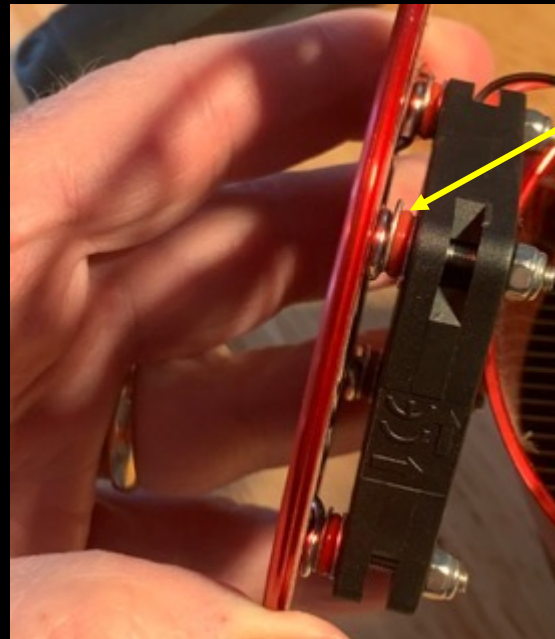
If yours is one of these, then I believe you may need to add those pads back to reduce the vibration

Purchase Dates:

ASI2600 – May 2020

ASI2400 – May 2022, used.

Mechanical connection to camera body through these four screws

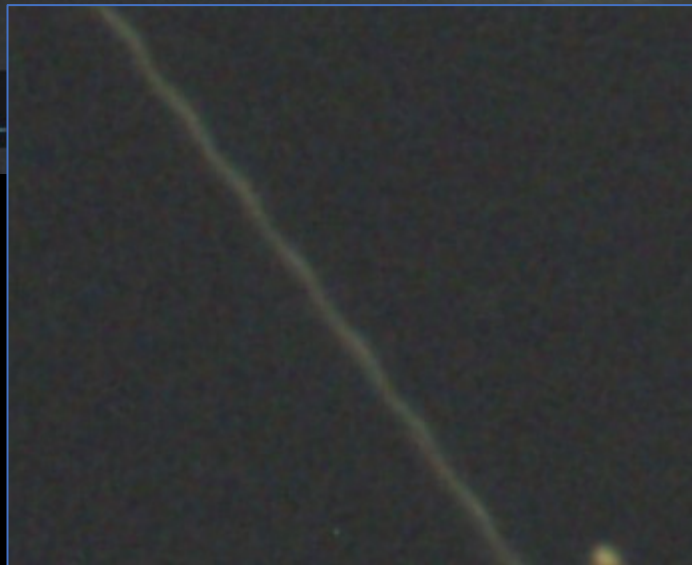
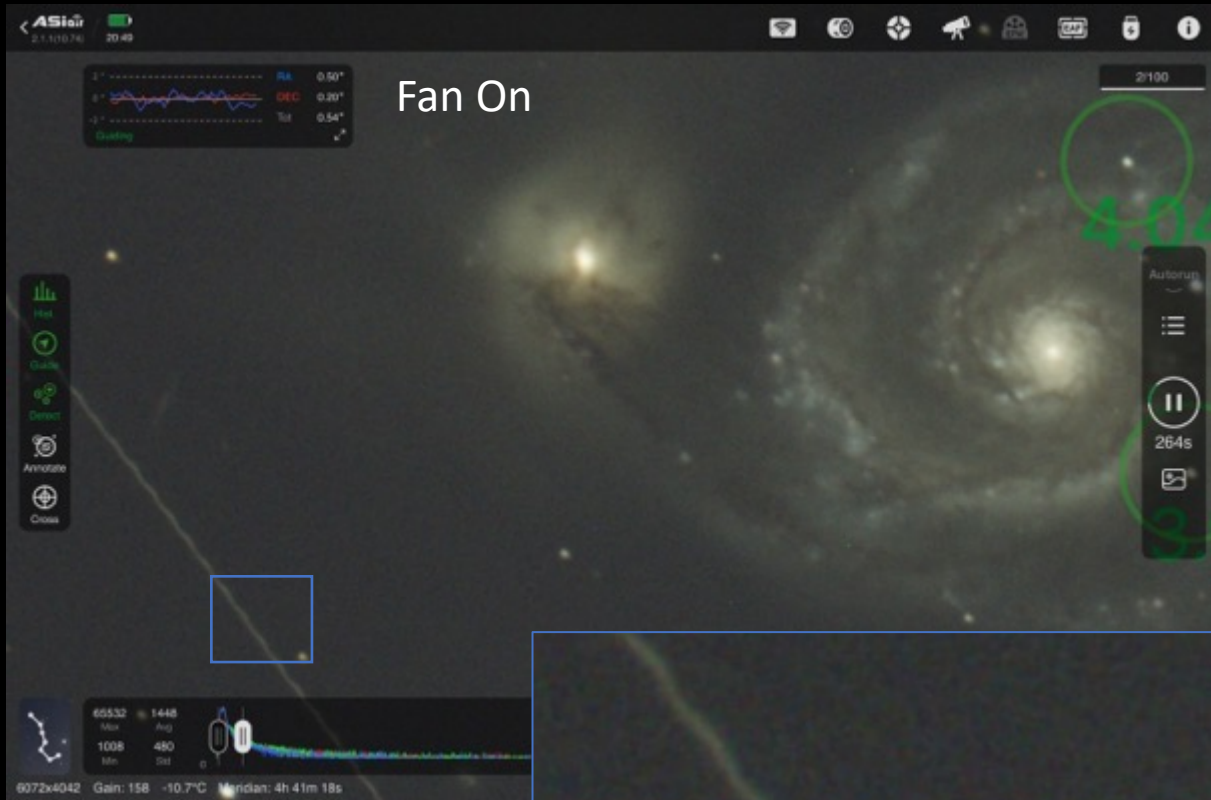


Confirmed only 1 rubber washer per corner.
They sent me additional ones.



Installed additional rubber washer on each post.
8 total.

Test with Edge HD (1960mm) and 2400mc-pro



Adding new vibration washers did not fix the issue, although it seems to have reduced the effect.

Other Solutions?

There is a significant discussion on CloudyNights about this problem with several of the ZWO cameras using the larger 50mm fans (e.g 2400, 2600, 6200), and also suggestions that this problem is much more widespread than thought, and may affect non-ZWO cameras as well.

Link: <https://www.cloudynights.com/topic/754253-asi62002600-fan-vibration-discussion/>

Most optimistic response:

I use the rubber suppression studs with the stock fan and it works fine.

(Noctua silicone suppression studs)

Solutions proposed range from changing fans to new studs, to other vibration damping and mechanical isolation solutions.



A YouTuber, **Exo Photography**, also discusses this problem and possible solutions:
https://www.youtube.com/watch?v=q0K_7oEQbEg

Conclusion

TAKE AWAY:

- *Look for tell-tail signs of camera vibration by observing satellite trails*
 - *Especially when using longer focal length scopes*
 - *I plan to replace my metal fan bolts soon with more isolating attachments. I will report back.*

ARCHIVING YOUR WORK

JOE PINEDA



Individual Presentations are Invited!

WHY ARCHIVE?



- New technologies...
 - You want to be able to reprocess your old imagery as new algorithms (e.g. BlurXterminator, SPCC, NSG) become available and your skills improve.
- Share your raw imagery...
 - As a teaching aid
 - Problem identification and resolution
- Scientific discovery & research
 - E.g. an image you have of the great red spot from 10 years ago compared to today's image.
- Self evaluation – how has your AP improved?

HOW TO ARCHIVE? (GENERATED WITH CHATGPT)



- Blu-Ray Disk...
 - 25GB (single-layer), 50GB (dual-layer), 100GB (triple-layer), 128GB (quadruple-layer)
 - Up to 50 years or more with proper care and storage
 - Use M-Disk if longer storage period needed...more expensive
 - Organic dye in Blu-Ray Disks less prone to degradation than DVD and CD
- Blu-Ray Disks vs. Hard Disk Drives (HDD) /NAS
 - HDDs have higher capacities but are more prone to mechanical failure
 - Blu-Ray Disks have longer life expectancy and lower cost per GB
- Blu-Ray Disks vs. Cloud Storage
 - Cloud storage offers scalability and accessibility, but costs can increase over time
 - Blu-Ray Disks provide a one-time cost with better control over data security

WHEN TO ARCHIVE?



- Ideally, after you complete the final version of your image...
 - You may have been using a prior dark, bias, flat library.
 - You will want to include that to make your archive “stand-alone”.
 - Think in terms of what you would need when you revisit the image years later.
- Any subtleties, notes, documents, articles that made the image what it is will still be fresh in your mind.

DAS / ASIG GALLERY FOR APRIL 2023



Your Imagery is Invited!



Tommy Lease

NGC 5985, NGC 5982, NGC 5981, and NGC 5976.

ZWO ASI533MM-Pro

- Antlia Pro LRGB
- Orion 6" f/4 newt
- LRGB- 300x60s subs = 5 hrs total
- 80% moon illumination

Acquired with NINA, processed in Pixinsight.



Tommy Lease

Monkey Head Nebula in HaRGB

ZWO ASI533MM-Pro

Antlia Pro HaRGB

Orion 6" f/4 newt

RGB- 120x60s

Ha- 80x180s

5 hrs total

80% moon Illumination

Acquired with NINA, processed in Pixinsight.



Vanessa Spindle

Rosette Nebula

243 x 120s @ ISO 100 (8 hours, 6
minutes total),
dithered every 5th sub
30 darks, 30 flats, 30 darkflats (each
night)

WO GT71 w/ 6Aiii .8x flattener

Nikon D5500

CEM40

Captured in NINA, stacked in Siril,
processed in PixInsight

Doug Triggs

NGC2237-9, 2244,
2246

Rosette Nebula

(Narrowband SHO +
True Color Stars)





Tommy Lease

Reprocess of the Elephant Trunk Nebula in LRGB.

This image was taken with my ASI533MM Pro, Orion f4 6" newt and ZWO LRGB filters.

This is approx 8 hrs worth of LRGB data.



Markarian's Chain (M86, M84, NGC4438, etc.) + M87 + Many Others (True Color)

Logan Knowles Rosette Nebula





Joe Gafford

NGC 3166 and NGC 3169
with asteroid and meteor
in Sextans.

10" F/4.5 Newtonian with
an SBIG ST-2000XM CCD
camera.

20 minute LRGB with 5 min
subs.

< Asteroid
(33659)
1999 JM91

NGC 3169

NGC 3166

Meteor

4/12/23

Doug Triggs

IC443 Jellyfish
Nebula

Narrowband SH/OO
+ True Color Stars





Vanessa Spindle

Monkey Head Nebula (NGC 2175)

Captured 2/25-2/26/2023

114 x 150s @ ISO 100 (4 hours, 45 minutes), dithered every 5th sub; 30 darks, 30 flats, 30 darkflats (each session)

Bortle 6, 40% moon WO GT71 Triplet Refractor w/ ZWO EAF WO 6Aiii .08x Flattener/Reducer Nikon D5500 50mm Guidescope w/ ASI224mc CEM 40 Mount

Captured using NINA, Stacked in Siril (w/ Sirilic), Post-Processing in Pixinsight



Tommy Lease

Bodes and Cigar Galaxies ultra-wide field with surrounding IFN or Integrated Flux Nebula.

Askar FMA 135

ZWO ASI533MM-Pro

Antlia LRGB filters

ES iEXOS-100

15 hrs total integration



Tommy Lease

Heart Nebula in SHO.

18hrs of SHO data ASI533MM-Pro,
Astrodon 5nm SHO filters,
Meade 70mm Quad APO

M42





Logan Knowles

Moon

Stacked from Video

Doug Triggs

M106

True Color



4/12/23

54

Looking into the Virgo Super-cluster

April 10, 2023
Meade 115mm APO
Celestron AVX mount
ASI 2600MC-pro
100x300s (8hr 20min)
Broadband
Bortle 5



NGC 4208



NGCs 4298, 4302



Virgo Pinwheel, M99

Needle Galaxy NGC 4565

March 18, 2023
Edge 11HD
Celestron CGX mount
ASI 2400MC-pro (FF)
35x600 broadband (5hr 50min)
Bortle 3



Skull & Crossbones Nebula SH2-311

March 16, 17, 2023
Edge HD11
Celestron CGX mount
ASI 2400MC-pro (FF)
26x600 (4hr 20min)
L-eXtreme
Bortle 3



Angel
Nebula
NGC2170

March 18, 2023
Celestron Edge 11HD
Celestron CGX mount
ASI2400mc-pro (FF)
17x600s (2hr 50min)
Bortle 3



Doug Triggs

NGC2264 Cone Nebula /
Christmas Tree + Field

Narrowband + True Color
Stars



Michael Brown-
Legary

Colorado Parks & Wildlife
Fire PC-12 with Moon

C4 Mak



M42 Orion Nebula
(Narrowband-Enhanced
True Color)



Doug Triggs

IC434/B33 Horsehead
Nebula + NGC2024
Flame Nebula
(Narrowband-Enhanced
True Color)



Tommy Lease

North America Nebula in
SHO.





Tommy Lease

NGC 2841 and Friends

ASI533MM-Pro

Antlia 1.25" RGB

Orion 8" f/4 Newt 800mm FL

SW Quattro CC

EQ6R-Pro

L- 85x120s, gain 100, -10c, bin2

R- 85x120s, gain 100, -10c, bin2

G- 85x120s, gain 100, -10c, bin2

B- 85x120s, gain 100, -10c, bin2

Total Integration: 11.3 hrs

Parker, CO, USA

Bortle 5 sky

Acquired in NINA, Processed in
Pixinsight

Orion, Running Man,
Horsehead, and Flame
Nebulae



Michael Brown-
Legary

Dumbbell Nebula





Tommy Lease

NGC 4145 and NGC 4151
(Eye of Sauron)

Dr. John Bickel

Two shots of NGC1365 - a double barred spiral galaxy.
First image was taken November 24, 2022. Recent shot was taken March 21, 2023.





Dr. John Bickel

Owl Nebula
M97, NGC3587

TOMMY LEASE – M51 WHIRLPOOL GALAXY



Equipment

Scope: VIXEN VMC200L 1800mm

Mount: EQ6R-Pro

Camera: ASI2600MM-Pro

Filters: Antlia 36mm LRGB

Integration

LRG&B

90x120s, gain 100, -10c, bin2

Total: 12 Hours

Location

Parker CO

Bortle 5

Acquisition & Processing

NINA and Pixinsite

TOMMY LEASE – M63 – SUNFLOWER GALAXY



Equipment

Scope: Orion 10" F/4 Newt

Mount: EQ6R-Pro

Camera: ASI533MM-Pro

Filters: Antlia 1.25" LRGB

Integration

LRG&B

80x120s, gain 100, -10c, bin2

Total: 10.6 Hours

Location

Parker CO

Bortle 5

Acquisition & Processing

NINA and Pixinsite

GREG FOGARTY– M42 ORION NEB THEN & NOW



Equipment

Scope: Edge 8 HD

Mount: AVX

Camera: ASI533MC-Pro

Filters: L-extreme

Integration

OSC

Then – 30mins 40ss

No Guiding (2020)

Now – 2 Hours (2023)

PHD2 Guiding

Location

Denver

Bortle 7ish

Acquisition & Processing

Then – APT/Gimp

Now – APT/Pixinsite

MARK KNOGGE – WORK FLOW CHANGES IMG #1



“Traditional” Process

- . DBE
- . Background Naturalize
- . Noise Reduction
- . RGB combination
- . Stretched with Histogram Trans
- . LRGB combination
- . Various to finish off image
- .

MARK KNOGGE – WORK FLOW CHANGES IMG #2



Color subs:

- DBE on each color
- Image Solver on one integrated sub to get astrometric data
- RGB combination
- SPCC to get color balance
 - no more guessing
- BXT • NXT • Stretch using HT
- SXT to split stars
 - / non-stars

Lum subs:

- DBE
- BXT • NXT • Stretch using HT
- SXT to split stars / non-stars.
 - Lum star frame is discarded

Final:

- Star color balance in CT
- Combine non-star lum, non-star RGB using LRGB
- Added RGB stars using PixMath.

MARK KNOGGE – M51 – BODE'S GALAXY



Equipment

Scope: AG Optical 12.5 idk

Mount: API200

Camera: ASI2600MM

Filters: Chroma 36mm

Integration

RGB 15x90sec each RGB

LUM 30x90sec

Location

Brighton CO

Less than average seeing

Acquisition

PHD2 (guiding)

MONTHLY IMAGE CHALLENGE MI01- THE PINWHEEL GALAXY



TOMMY LEASE – M101 – PINWHEEL GALAXY



Equipment

Scope: Orion 10" F/4 Newt

Mount: EQ6R-Pro

Camera: ASI533MC-Pro

Filters: Antlia 1.25" LRGB

Integration

RGB

700x120s, gain 100, -10c, bin 1

Total: 23.3 Hours

Location

Parker CO

Bortle 5

Acquisition & Processing

NINA and Pixinsite

Part of 100hour project!

M101 Pinwheel Galaxy



March 16, 2023
Edge HD11
Celestron CGX mount
ASI-2400mc-p
66x300s - broadband
17x600s - L-eXtreme
(8.3 hours total)
Bortle 3

M51 Whirlpool Galaxy



April 7, 2023
Edge HD11
Celestron CGX mount
ASI-2400mc-p
60x300s - broadband
(5 hours)
Bortle 3

APRIL MONTHLY IMAGE CHALLENGE

M51 / THE WHIRLPOOL GALAXY



In Hubble's captivating image of M51, the red represents infrared light as well as hydrogen within giant star-forming regions. The blue color can be attributed to hot, young stars while the yellow color is from older stars.

Credits: NASA, ESA, S. Beckwith (STScI) and the Hubble Heritage Team (STScI/AURA)

NEXT ASIG MEETING IS 3RD MAY 2023, 7PM MST
THANK YOU!

