



# Speakers



**John Rummel.** I was a childhood amateur astronomer with the Sears-Roebuck refractor telescope on my front lawn, independently discovering the rings of Saturn. I lost track of the hobby in high school and didn't pick it up again until I was in my 30s and living in Madison. I soon discovered the Madison Astronomical Society and have been a member now for almost 30 years. I have served as outreach coordinator, public relations lead, newsletter editor, president, meeting planner, and now club historian. I don't do much eyepiece observing anymore, but prefer to travel the country in search of the darkest places for purposes of solitude, camping, and nighttime photography.



John is a retired school psychologist (retired in 2017 from Madison Metropolitan School District)

## **NCRAL Talk: "Can the Milky Way Cast a Shadow"**

Stories of the Milky Way casting a shadow are common but details are elusive. Whenever someone wants to brag about the great dark skies they experienced they often invoke the claim "it was so dark you could see your shadow by the light of the Milky Way." Asking follow-up questions usually results in repetition and hand-waving.

But could it be true? Is it possible? After all, the Milky Way is large, diffuse, and faint. The sun and moon cast shadows. Bright point sources cast shadows. It's even said that Venus or Jupiter can cast shadows. Can the huge Milky Way, spread across 90 degrees of sky (or more), cast a shadow? In this talk, I move beyond hearsay, legend, and myth and attempt to nail down some facts and experimental results. I have been working on this talk in some form for more than 10 years and I've finally got some photographic evidence to show. This may change the way you think about dark skies!



# Speakers



**Bob King**, writer, photographer, public science educator, speaker for NCRAL 2024 conference.



Bob King fell in love with the night sky and astronomy when he was a kid and loves to share his passion with people of all ages.

Bob writes the Explore the Night column and Celestial Calendar for *Sky & Telescope*, teaches community education astronomy in Duluth and pens the Astro Bob blog. His latest book, *Magnificent Aurora*, is a comprehensive guide to the northern lights.

He lives in Duluth, Minnesota with his family and enjoys classical music and hiking.

Bob retired from the Duluth News Tribune after working there for nearly four decades as a photographer and photo editor.

## **NCRAL Talk: "NASA's Planned NEO Surveyor Hunts Down Killer Asteroids"**

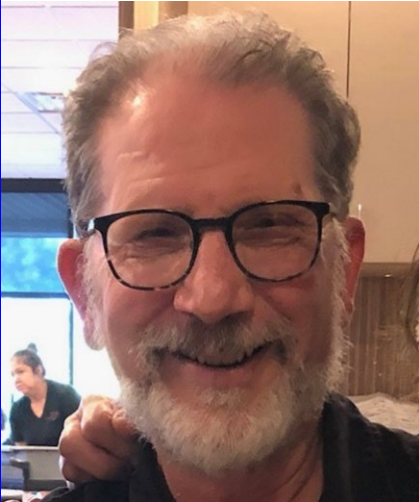
My topic will be the planned mission of NASA's NEO Surveyor Space Telescope, which is designed to hunt asteroids and comets that could potentially threaten Earth. It will provide coverage in crucial areas of the sky, notably in the direction of the sun — a long-time blind spot. I'll talk about observing PHOs (Potentially Hazardous Objects) and also bring meteorites from several types of asteroids to pass around.



# Speakers



**Lawrence Rudnick** is Professor Emeritus of Astrophysics at the University of Minnesota. His research has encompassed supernova remnants, radio galaxies, galaxy clusters and cosmic large-scale structure. He works primarily in the radio regime, with some X-ray and a dabbling of optical and infrared. His teaching ranged from a freshman course on “Nothing” to supervising PhD students. Rudnick has been involved in a large number of public activities, including being a prime driver behind the Bell Museum’s Planetarium, years on public TV’s Newton’s Apple, teacher training, and dialogues with religious leaders. Amateur astronomers are among his favorites!



## **NCRAL Talk: “Game Changers in the Radio Sky”**

The world of radio astronomy has come a long way from the days where only the Sun and Milky Way were detectable, to the modern world of globe-spanning interferometers, multi-pixel focal plane arrays, and incredibly sensitive multi-wavelength characterization of the cosmic background radiation. I will discuss a small subset of areas where things are changing rapidly in radio-land, with a focus on the international work with precursor surveys and telescopes on the path to the Square Kilometer Array. We’ll look at some of the exciting new and surprising results, which actually shouldn’t be a surprise when you open up major new technical capabilities, along with parallel efforts in machine learning and citizen science.





# Speakers



**Clem Pryke** is a physics professor and an experimental cosmologist. His research centers on the cosmic microwave background (CMB) the after-glow from early times when the Universe was a smooth hot plasma. By studying the CMB we can learn much about the origin, contents, and ultimate fate of the Universe - CMB studies are at the center of the current "golden age" of cosmology. Pryke has played a leading role in the construction and operation of a series of CMB telescopes at the South Pole in Antarctica, and in the analysis of the data they produced. He was a key member of the DASI team which produced the first detection of the polarization of the CMB. He co-led the QUaD experiment another ground breaking CMB polarimeter. Currently he is co-leading the BICEP experiments, which take sensitivity to the next level in the quest to detect gravitational waves spawned by inflation in the first instant after the Big Bang. In total he has spent well over a year of his life at the South Pole.



## **NCRAL Talk: Studying the Beginning of the Universe from the Bottom of the World**

Cosmology is the study of the Universe, its origin, composition, and ultimate fate. Once the domain of mystics and philosophers, in recent decades cosmology has become a vibrant science with fresh data coming in thick and fast. The contemporary Universe is expanding, and using specialized radio telescopes we can see the glow from when it was hot formless plasma 14 billion years in the past - the so-called Cosmic Microwave Background (CMB).

In recent years the remarkable idea has emerged that the entire Universe which we see today was once a subatomic spec which underwent an incredibly brief burst of hyper expansion, or "inflation". Far fetched though such an idea sounds it actually turns out to be the simplest explanation for all the data collected so far. The Inflation Theory also makes an additional - so far unconfirmed - prediction: that the hyper expansion will have injected a "background" of gravitational waves into the fabric of spacetime.

Our experiments at the South Pole in Antarctica are currently searching for the imprint that these inflationary gravitational waves may have left in the polarization pattern of the CMB. I will describe some of the history and evidence for the basic Big Bang cosmology and why we need Inflation, and then some of the technology and logistics which are required to build and operate our telescopes at one of the most remote and inhospitable locations on Earth.



# Speakers



**Evan Skillman**, was born in Rochester, NY. He obtained his BA in physics from Cornell University and his Ph.D. in Astronomy from the University of Washington. His Ph.D. thesis, “Physical Conditions in Giant Extragalactic H II Regions,” was supervised by Bruce Balick.



After postdoctoral research positions at the Netherlands Foundation for Radio Astronomy and the University of Texas, he joined the faculty of the Astronomy Department at the University of Minnesota in 1989. He has enjoyed sabbatical years at the Max Planck Institute for Theoretical Astrophysics in Garching, Germany and at the Insitute for Astronomy in Cambridge. He was director of the Minnesota Institute for Astrophysics from 2014 to 2023. He is a fellow of the American Physical Society and a UMN College of Science and Engineering Distinguished Professor.

Evan is a multiwavelength observer of extragalactic objects, with a concentration on nearby galaxies. He has studied the interstellar medium, the stellar populations, the chemical abundances, and the dark matter content of nearby galaxies, with a focus on dwarf galaxies.

## **NCRAL Talk: "Using the Large Binocular Telescope to Measure the Primordial Helium Abundance"**

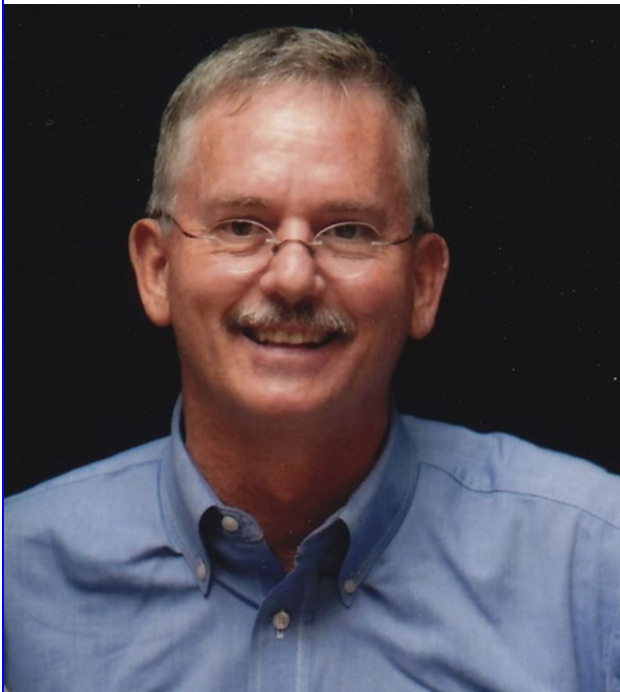
As a result of Big Bang nucleosynthesis, the primordial helium abundance ( $Y_p$ ) is sensitive to several cosmological parameters, and thus, is an important cosmological constraint. I will describe a National Science Foundation supported observational program to better determine  $Y_p$ . I will provide a background on the Big Bang, define the observational goals of the project, and share the most recent results.



# Speakers



**Greg Bragg**, Greg Bragg has spent 33 years in the photo industry and 19 years in the astronomy industry. Early in his career he had managed teams or sold products for Wolf Camera, Olympus Camera Company, Pentax, Vixen, and Tele-Vue, In the early 2000s, he operated as an independent representative servicing 7 southeastern states and 12 brands generating over 15 million dollars in sales by marketing for companies such as Leica, Bogan,



Mamiya, LowePro, Meade, Tamron, Schneider, Booth Photographic, Lumedyne, Monster Cable, Bacharach Brackets, and AquaTech. He was VP of Specialty Sales for Meade Instruments from 2007-12, Director of Specialty Sales for Explore Scientific from 2012-18, spent 15 months with Ricoh and Pentax and finished his career with Celestron as Specialty Accounts Sales Manager from 2019-23. He continues with his “retirement” doing part-time sales with Starfield Optics and as an Independent Representative for Pentax Sport Optics. He feels blessed to be able to make his hobby his living over the years. This January at the Winter Star Party in the Florida Keys, he will attend his 124th star party selling telescopes and promoting astronomy!

## **NCRAL Talk: "State of the Astronomy Industry"**

1. How big is the industry?
2. Is there positive or negative growth and why?
3. A bit of history of the most popular manufactures.
4. What's happened to the telescope stores?
5. Key Retailers and E-Commerce players.
6. Marketing the product, the cost and how it's being promoted.





# Speakers



**Mike Benson, PhD.** is a retired VP of Research and Development for Hormel Foods at their Jennie-O Turkey Store facility. Mike is an avid astrophotographer who enjoys editing and taking astro pictures in his backyard and anywhere else he can find dark skies. He uses his SkyWatcher Esprit 100 refractor for astro images and has rented time on various telescopes in Chile, Australia and Spain for some of his southern hemisphere images. Mike loves the night sky and is an active member of the Rochester Astronomy Club.



## **NCRAL Talk: "Astrophotography, My Journey"**

Astrophotography, captures the breathtaking beauty and secrets of the cosmos. It requires specialized equipment to collect faint light over long exposures, revealing details invisible to the naked eye. From capturing the vibrant colors of nebulae to the majestic dance of galaxies, astrophotography allows us to witness astronomical phenomena in stunning detail, pushing the boundaries of human observation. This unique form of photography not only produces awe-inspiring images but also serves as a powerful tool for scientific discovery, helping us understand the universe's vastness and composition.