JULY

2018

BOARD OF VISITORS SUMMER MEETING

McDONALD OBSERVATORY

McDonald Observatory
The University of Texas at Austin

The University of Texas at Austin
Department of Astronomy
College of Natural Sciences

AGENDA

Board of Visitors 2018 Summer Meeting

McDONALD OBSERVATORY

Friday, July 13, 2018

3:00 p.m.
Registration Opens
Table near the Auditorium, Frank N. Bash Visitors Center

4:00 - 6:00 p.m.
***"The State of the Skies Over McDonald Observatory"* by Bill Wren**
Frank N. Bash Visitors Center Auditorium

5:30 p.m.
Registration Re-Opens
Tents near the Frank N. Bash Visitors Center

6:00 - 9:00 p.m.
Reception & Dinner
Tents near the Frank N. Bash Visitors Center

9:00 p.m.
Shuttle Service Begins
Shuttles will depart from the dinner tents

9:15 - 10:30 p.m.
Special Viewing Opportunity
View celestial objects through our research telescopes

9:30 p.m.
Public Star Party
Frank N. Bash Visitors Center

Saturday, July 14, 2018

7:00 a.m.
Shuttle Service begins to 107-inch Telescope for Breakfast
Shuttles will depart from the Frank N. Bash Visitors Center

7:15 - 8:15 a.m.
Breakfast
Harlan J. Smith Telescope (107-inch)

8:30 - 9:00 a.m.
Board of Visitors Business Meeting Led by Bobby McGee, BOV Chair

9:05 - 9:25 a.m.
***"Views from the Intersection of Creativity and Reason, Beauty, and Impact"* by Incoming College of Natural Sciences Dean Paul Goldbart**

9:30 - 9:50 a.m.
McDonald Observatory Director Report by Dr. Taft Armandroff

9:55 - 10:15 a.m.
Astronomy Department Chair Report by Dr. Shardha Jogee

10:20 - 10:55 a.m.
Break

COVER IMAGE BY **Ethan Tweedie**

This long exposure image captures star trails over the Hobby-Eberly Telescope as the Earth rotates. The Hobby-Eberly Telescope, with its 10-meter aperture, is one of the largest optical/infrared telescopes on Earth. The Hobby-Eberly Telescope has undergone a major upgrade, increasing its field-of-view dramatically and coupling it with new advanced instrumentation, and has returned to scientific operations.

11:00 a.m. - 12:10 p.m.
Science Talks

"Galactic Archaeology: Mapping Stellar Fossils Across the Galaxy"
Dr. Keith Hawkins, *Incoming Assistant Professor*

"Where Did We Come from? Studies of Comets to Understand our Origins"
Dr. Anita Cochran, *Senior Research Scientist*

"Illuminating the Physics of Star and Planet Formation with the Nearest Newly-Formed Stars"
Daniel Krolikowski, *Graduate Student*

12:30 - 2:00 p.m.
Lunch
Shuttles will depart to the Frank N. Bash Visitors Center

2:15 - 3:15 p.m.
Science Discussion Groups, *First Session* Frank N. Bash Visitors Center

SDG 1: *"Introduction to Astronomy"*
Dr. Michael Endl, *Senior Research Scientist and Lecturer*
Frank N. Bash Visitors Center Auditorium

SDG 2: *"Understanding Planetary Habitability: Where Does Life Exist Beyond Earth, and How Can We Find It?"*
Dr. William Cochran, *Research Professor*
Frank N. Bash Visitors Center Classroom

SDG 3: *"Texas Science Opportunities during Early GMT Operations"*
Dr. Gary Hill, *Research Professor*
Frank N. Bash Visitors Center Exhibit Hall

3:30 - 4:30 p.m.
Science Discussion Groups, *Second Session* Frank N. Bash Visitors Center

SDG 4: *"The Visible and Invisible Universe: Scale and Content"*
Dr. Don Winget, *Professor*
Frank N. Bash Visitors Center Auditorium

SDG 5: *"Image: The Engine that Powers Astronomy"*
Dr. Fritz Benedict, *Senior Research Scientist*
Frank N. Bash Visitors Center Classroom

SDG 6: *"Texas Instrumental Opportunities during Early GMT Operations"*
Dr. Hanshin Lee, *Research Scientist*
Frank N. Bash Visitors Center Exhibit Hall

6:30 - 9:00 p.m.
Reception & Dinner
Tents near the Frank N. Bash Visitors Center

9:00 p.m.
Shuttle Service Begins
Shuttles will depart from the dinner tents

9:15 - 10:30 p.m.
Special Viewing Opportunity
View celestial objects through our research telescopes

9:30 p.m.
Public Star Party
Frank N. Bash Visitors Center

A LETTER FROM

THE McDONALD OBSERVATORY DIRECTOR

Dear Members of our Board of Visitors and Guests,

On behalf of the UT Astronomy Program, I warmly welcome you to our 2018 Summer Board of Visitors Meeting!

We have planned a rich and diverse program of talks and discussion groups to share scientific and programmatic advances with you. The topics range from comets in our own Solar System to stellar relics from a past era in the life of the Milky Way galaxy. We also have an "Introduction to Astronomy" session for our new members and anyone seeking a refresher.

We are fortunate to feature a talk by incoming Dean Paul Goldbart of the College of Natural Sciences. I trust that you will all help welcome him to Texas, its flagship University, and McDonald Observatory.

I also plan to share with you the exciting progress that we are making in constructing the Giant Magellan Telescope on a mountaintop in Chile. In addition, I'll report on how the transformed Hobby-Eberly Telescope and its new instrumentation are allowing us to conduct research that was inaccessible to Texas astronomers previously.

Thank you for all you do for McDonald Observatory and the Department of Astronomy.

I wish you clear skies and a stimulating meeting.

Taft Armandroff

Dr. Taft Armandroff
Director, McDonald Observatory

A LETTER FROM

THE ASTRONOMY DEPARTMENT CHAIR

Dear Members of our Board of Visitors and Guests,

On behalf of the UT Astronomy Program, I am delighted to welcome you to our 2018 Summer Board of Visitors (BOV) Meeting. BOV members are a vital part of our success and I am deeply grateful for your continued support.

Over the last year, the BOV has helped UT Astronomy recruit world-class faculty in the field of planetary science and star formation, thereby advancing frontier astronomical research in Texas on the formation of stars, planets, and the exploration of life outside our solar system. Along with the College of Natural Sciences, you have also helped us double the size of our undergraduate (UG) research computer lab and transform it into an experiential learning space that is vital for our research-enhanced 21st century UG degree program. I am pleased to report that the new lab will be ready when our students return to class in late August 2018 and I hope you will come to visit it sometime. Thank you for this major milestone!

I look forward to sharing with you other major initiatives to bolster Texas leadership in unveiling the mysteries of the Universe. I also want to extend a warm welcome to our new members. We are glad to have you join with us and hope you enjoy the wonderful program that we have in July. Make sure to mark your calendar and join us in February in Austin! We will be on UT campus at the AT&T Executive Education Conference Center February 15-16, 2019.

Thanks again for all that you do to support UT Astronomy!

Warm Regards,

Dr. Shardha Jogee
Professor & Astronomy Department Chair

WELCOME, DEAN PAUL M. GOLDBART!

Dean of the College of Natural Sciences

Paul M. Goldbart is the incoming Dean of the College of Natural Sciences at The University of Texas at Austin. He will become dean after having served as Dean of the College of Sciences at the Georgia Institute of Technology, where he was the inaugural holder of the Betsy Middleton and John Clark Sutherland Chair. He earned a B.A. in Physics and Theoretical Physics from Cambridge University (1981), an M.S. in Physics from UCLA (1982), and a Diploma in Mathematical Physics and a Ph.D. in Physics from Imperial College London (1985).

Goldbart's research is primarily on the physics of condensed matter, exploring how the large-scale features of matter – e.g., rigidity, liquid crystallinity, magnetism, and superfluidity – emerge as consequences of the nature of the constituents and the interactions between them. He interacts widely, with both experimentalists and theorists, and has co-authored approximately 150 journal articles and a textbook: Mathematics for Physics – A Guided Tour for Graduate Students. Goldbart has been elected to fellowships in the American Physical Society, the U.K.'s Institute of Physics, and the American Association for the Advancement of Science, and was named a National Science Foundation Presidential Young Investigator. At the University of Illinois at Urbana-Champaign, where he spent 25 years before moving to Georgia Tech, Goldbart led a large-scale, multi-investigator Department of Energy program on Quantum Materials at the Nanoscale, and he was the founding director of the university's Institute for Condensed Matter Theory.

He is an advocate for public engagement in science and mathematics and for science as a model for addressing complex challenges. At Georgia Tech, he launched a lecture series to expose the public to exciting topics in contemporary science and delivered a lecture for the series on the 2016 Nobel Prize in Physics and on Einstein's contributions to the quantum revolution. He currently serves as Trustee of the Aspen Center for Physics and has advanced the Atlanta Science Festival – which in 2018 featured a hundred events across the city – through his service on its Board of Directors and as the festival's first Honorary Chairperson.

Friday, July 13, 2018
4:00 - 6:00 p.m., Frank N. Bash Visitors Center Auditorium

SCIENCE TALK

"The State of the Skies Over McDonald Observatory"

BILL WREN, M.ED., *SPECIAL ASSISTANT TO THE SUPERINTENDENT, DARK SKIES AMBASSADOR*

Abstract: Over the past 10 years, oil and gas related activities in and around the Permian Basin have led to a brightening of the sky along the northern horizon of the McDonald Observatory. While the skies overhead remain extremely dark, as these activities draw closer to the Observatory, they threaten to brighten the skies further. Mr. Wren will report on measurements made with an All Sky Photometry system acquired to monitor the state of the skies, and his work with the oil and gas industry to help light their nighttime activities in a dark sky friendly way.

Bill Wren, M.Ed., has been fascinated by the night sky all his life. He studied Philosophy and Educational Psychology at the University of Texas. He also audited courses in the Astronomy Department, and was an academic tutor for undergraduate students in astronomy.

In 1990, Bill began working at McDonald Observatory as a Public Affairs Specialist and part-time researcher. He also helped design and build several unique telescopes, one of which is wheelchair accessible and dedicated for public use at the Observatory's Visitors Center.

Throughout his career at McDonald Observatory, Wren has been deeply involved in protecting the Observatory's dark night skies, an endeavor which remains a large part of his duties. His greatest satisfaction comes from conveying the wonders of the universe to the tens of thousands of people who visit the Observatory each year.

Saturday, July 14, 2018

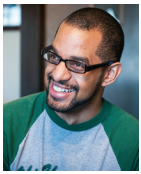
11:00 - 11:20 a.m., Harlan J. Smith Telescope Dome Floor

SCIENCE TALK

"Galactic Archaeology: Mapping Stellar Fossils Across the Galaxy"

DR. KEITH HAWKINS, *INCOMING ASSISTANT PROFESSOR*

Abstract: Almost every star you see in the night sky with your naked eye is a part of a vast system called the Milky Way. It is an average-sized barred spiral galaxy with upwards of 100 billion stars and its formation, assembly and evolution are still a mystery. In this talk, Dr. Hawkins will discuss how Galactic archaeology is being used today to understand how the Milky Way came to be.



Dr. Keith Hawkins is an incoming Assistant Professor of Astronomy at The University of Texas at Austin. He received his B.S. in Astrophysics with minors in Mathematics and African Studies from the Honors Tutorial College at Ohio University in 2013 and his Ph.D. in Astronomy at the Institute of Astronomy, University of Cambridge in the UK. Prior to his arrival on UT's campus this fall, he will finish a postdoctoral fellowship at Columbia University, a part of the Simons Foundation Society of Fellows. His research interests are in galactic archaeology, with the goal of revealing the formation and evolution of our galaxy through detailed chemical and dynamical studies of individual stars.

Saturday, July 14, 2018
11:25 - 11:45 a.m., Harlan J. Smith Telescope Dome Floor

SCIENCE TALK

"Where Did We Come from? Studies of Comets to Understand our Origins"

DR. ANITA COCHRAN, *SENIOR RESEARCH SCIENTIST, ASSISTANT DIRECTOR OF MCDONALD OBSERVATORY*

Abstract: Comets are the least altered bodies left over from when our Solar System formed. As such, studies of comets offer good constraints to conditions in the early solar nebula. Dr. Cochran has been studying comets at McDonald Observatory since 1979. She will relate some of what she and her team have learned and highlight observations they are planning to make in the next six months.

Dr. Anita Cochran has been the Assistant Director of McDonald Observatory since January 2004. She obtained her B.A. from Cornell University in Physics and M.A. and Ph.D. in Astronomy from The University of Texas at Austin. During her career, Dr. Cochran has concentrated on trying to understand the conditions in the early solar nebula by studying the most primitive bodies left over from the time of formation of the Solar System. She is an expert on the chemistry of comets.

Saturday, July 14, 2018
11:50 a.m. - 12:10 p.m., Harlan J. Smith Telescope Dome Floor

SCIENCE TALK

"Illuminating the Physics of Star and Planet Formation with the Nearest Newly-Formed Stars"

DANIEL KROLIKOWSKI, *GRADUATE STUDENT*

Abstract: The study of young stars is important to our understanding of the way in which stars form and the wide array of physics that sets the properties of the stellar populations that comprise our galaxy. The Taurus dark cloud is the nearest site of ongoing stellar birth, and likely the most thoroughly studied, but even today we continue to find new stellar members. Krolikowski will present a survey of the Taurus region undertaken with the Tull spectrograph on the Harlan J. Smith telescope and discuss the discovery of a new stellar population associated with the canonically known Taurus region. Discovering planets around young stars is key to understanding planet formation, and this newly discovered stellar population is ideal for such a search in the future with McDonald Observatory's state-of-the-art facilities.

Daniel Krolikowski is a graduate student working with Professor Adam Kraus on nearby young stars, with an aim to search for and characterize planets around them in the future. Originally from Long Island, New York, Daniel earned his undergraduate degrees in Physics and Mathematics at SUNY Geneseo in upstate New York.

Saturday, July 14, 2018
2:15 - 3:15 p.m., Frank N. Bash Visitors Center Auditorium

SCIENCE DISCUSSION GROUPS

"Introduction to Astronomy"

DR. MICHAEL ENDL, *SENIOR RESEARCH SCIENTIST AND LECTURER*

Abstract: This SDG will highlight Dr. Endl's non-science major astronomy survey course and condense it into one hour. The SDG will cover a broad understanding of the nature, scope and evolution of the Universe, and where the Earth and Solar System fit in. No prerequisites or tests required!

Dr. Michael Endl is a Senior Research Scientist and Lecturer of Astronomy at The University of Texas at Austin. He obtained his Ph.D. in Astronomy from the University of Vienna in Austria. After finishing his degree, he came to the University of Texas as a post-doctoral fellow to look for extrasolar planets. Dr. Endl was involved in the discovery of Proxima b, an exoplanet orbiting the habitable zone of the red dwarf star Proxima Centauri, which is the closest star to the Sun. He also is involved in several various projects to confirm and validate other exoplanet candidates.

Saturday, July 14, 2018

2:15 - 3:15 p.m., Frank N. Bash Visitors Center Classroom

SCIENCE DISCUSSION GROUPS

"Understanding Planetary Habitability: Where Does Life Exist Beyond Earth, and How Can We Find It?"

DR. WILLIAM COCHRAN, *RESEARCH PROFESSOR*

Abstract: This summer the University of Texas Vice President for Research is sponsoring a "Pop-Up Institute" on the topic of Planetary Habitability. This has been a cooperative effort of University of Texas researchers in the College of Natural Sciences (Dept. of Astronomy, McDonald Observatory, Chemistry, Molecular Biology, Integrative Biology), the Jackson School of Geosciences (Dept. of Geological Sciences, Institute for Geophysics) and the Cockrell School of Engineering (Aerospace Engineering, Civil Engineering, Center for Space Research). This Institute brings in international experts on various aspects of Planetary Habitability:

- The Origin of Life
- Planetary Processes that Affect Life
- What Makes a Planet Habitable?
- How Can We Find and Recognize Life?

Dr. Cochran will report on the extremely interesting discussions at the "Pop-Up Institute" and what could come to fruition from these discussions at The University of Texas at Austin.

Dr. William Cochran is a Research Professor with McDonald Observatory and the Department of Astronomy of The University of Texas at Austin. He holds a B.S. in Physics from Duke University and a Ph.D. in Astrophysics from Princeton University. As he was finishing his Ph.D. work, he was recruited by Harlan Smith to join the McDonald Observatory planetary science group, where he spent many years studying the atmospheres of the planets in our solar system. He then became interested in searching for planets orbiting other stars, and started one of the first programs of high precision stellar radial velocity measurement. The McDonald Observatory exoplanet research group has discovered dozens of planets using the McDonald Observatory 2.7m Harlan J. Smith Telescope and the Hobby-Eberly Telescope. Cochran was a Co-Investigator on the NASA Kepler space mission, and is very active in the follow-on K2 mission.

Saturday, July 14, 2018

2:15 - 3:15 p.m., Frank N. Bash Visitors Center Exhibit Hall

SCIENCE DISCUSSION GROUPS

"Texas Science Opportunities during Early GMT Operations"

DR. GARY HILL, *RESEARCH PROFESSOR*

Abstract: The international astronomy community is currently developing three "extremely large telescopes" (ELTs) which represent a huge leap in capability compared to current facilities. The Giant Magellan Telescope (GMT), The Thirty Meter Telescope (TMT), and the European ELT (EuroELT) are slated to come on line in the second half of the coming decade with GMT leading the pack with first light in 2025.

The GMT is already under construction, with site preparation started and the first 5 of 7 primary mirrors being fabricated. The University of Texas at Austin is a founding member of the GMT consortium with a desire to achieve a 10% share of the observing time.

Dr. Hanshin Lee and Dr. Hill are presenting a pair of Science Discussion Group presentations on the GMT, highlighting Texas science and instrumentation opportunities in the early operations phase. In the first presentation, Dr. Hill will review the status of GMT and the instrument program, compared to the two competing extremely large telescopes (the TMT and European ELT) and highlight the particular science opportunities that UT astronomers will have when first science operations start. In the second presentation, Dr. Lee will focus on the new VIRUS2 instrument and the novel segmented wide field corrector called AWACS that together can open up wide-field survey science on GMT right at first light (See Dr. Lee's abstract).

Dr. Gary Hill started out as a Physics student at Oxford University. After a summer at the University of Arizona Steward Observatory he decided to pursue his joint interests in astronomical instruments and observational astronomy, earning his Ph.D. at the University of Hawaii. He joined The University of Texas at Austin as the W.J. McDonald Postdoctoral Fellow in 1988. Gary has been the Principal Investigator for several instruments at McDonald Observatory, including the Hobby-Eberly Telescope's first and second Low Resolution Spectrographs. He is the Principal Investigator of the Hobby-Eberly Telescope Dark Energy Experiment (HETDEX), which aims to understand the nature of Dark Energy that dominates the Universe, along with the innovative VIRUS spectrograph suite that will ultimately provide the data needed for the project. He also leads the wide field upgrade of the HET and is Principal Investigator of the new VIRUS2 instrument for the Harlan J. Smith Telescope.

Saturday, July 14, 2018

3:30 - 4:30 p.m., Frank N. Bash Visitors Center Auditorium

SCIENCE DISCUSSION GROUPS

"The Visible and Invisible Universe: Scale and Content"

DR. DON WINGET, *PROFESSOR*

Abstract: Dr. Winget will discuss the known and unknown Universe from the perspective of both a professional and an amateur astronomer. This interactive presentation assumes no prior knowledge and includes a "factor of 100" video that goes from the human scale to the scale of the cosmic background radiation. Dr. Winget will discuss what scientists know and don't know about dark matter and dark energy along with the content of the visible universe. Dr. Winget will also discuss why telescopes are important in the context of the visible universe and how this reveals the presence of the invisible.

Dr. Winget will present the scale in a relative sense, so attendees walk away with an intuitive understanding of why stars collide only rarely and galaxies do so frequently. Attendees will also learn why the entire Hubble Deep Field image includes thousands of galaxies, yet is no bigger on the sky than a grain of sand held at arm's length. This will help attendees understand that the HETDEX field is vast because it is far-reaching in terms of the number of galaxies it encompasses.

Dr. Don Winget has an undergraduate degree in Physics from the University of Illinois, and a master's degree and Ph.D. in Physics and Astronomy from the University of Rochester. Dr. Winget is the Harlan J. Smith Centennial Professor of Astronomy and a University Distinguished Teaching Professor. In 1982, during his first year at the University of Texas, Dr. Winget predicted and discovered a new class of pulsating variable stars. In 1985, he made the first direct measurement of stellar evolution. In 1987, he developed a new method for measuring the age and assembly history of the Galaxy, currently the most accurate method for dating the stellar components of the galaxy. Dr. Winget co-founded, with Prof. R.E. Nather, the Whole Earth Telescope (WET). Dr. Winget and his research group use their observations of pulsating white dwarfs to do extreme physics, constraining masses of theoretically proposed particles. This work will help explore the physical nature of dark matter. Dr. Winget and his collaborators have used the Hubble Space Telescope observations of globular clusters to demonstrate that the dense Coulomb plasma in white dwarf stars crystallize and release latent heat in the process. He is currently involved in a project at Sandia National Laboratories to reproduce the conditions at the surfaces of white dwarf stars in the laboratory, thereby dramatically improving our understanding of these fundamental stellar objects.

Saturday, July 14, 2018

3:30 - 4:30 p.m., Frank N. Bash Visitors Center Classroom

SCIENCE DISCUSSION GROUPS

"Image: The Engine that Powers Astronomy"

DR. FRITZ BENEDICT, *SENIOR RESEARCH SCIENTIST*

Abstract: For the past 400 years nothing separated the progress of astronomy from the effort to see more clearly. This increase in clarity of vision allows people to see the previously unseeable. The joys of astronomical imagery range from the aesthetic to excitement over the questions raised by each new picture. Astronomy is 'Art Appreciation' turned into 'Universe Appreciation'. The Giant Magellan Telescope will be a camera surpassing any on ground or in space.

Dr. Fritz Benedict received his Ph.D. in 1972 from Northwestern University. He came to The University of Texas at Austin in 1972, a temporary job he has to this day. His present position is Senior Research Scientist with McDonald Observatory.

In 1977, Dr. Benedict became a member of the Hubble Space Telescope Astrometry Science Team. His project responsibilities included designing a Guide Star Selection System for the HST, used as the basis for the system now in use at the Space Telescope Science Institute. After HST launch in 1990, his astrometric scientific interests have centered on sub-millisecond of arc precision parallaxes (precise distances to stars) and the astrometric characterization of low mass companions to stars (exoplanet masses).

His interest in space astrometry led to participation in more than 20 Guest Observer projects with Hubble Space Telescope over the last 20 years, most as Principal Investigator.

Dr. Benedict's interests outside astronomy include sailing a Catalina 22 on what's left of Lake Travis, reading, walking his ridiculously small dog, and shirking home maintenance.

Saturday, July 14, 2018

3:30 - 4:30 p.m., Frank N. Bash Visitors Center Exhibit Hall

SCIENCE DISCUSSION GROUPS

"Texas Instrumental Opportunities during Early GMT Operations"

DR. HANSHIN LEE, *RESEARCH SCIENTIST*

Abstract: The next decade will see the arrival of three 30m class Extremely Large Telescopes (ELTs). These are the Giant Magellan Telescope (GMT), the Thirty-Meter Telescope (TMT), and the European Extremely Large Telescope (E-ELT). These giants are promising a profound transformation in humanity's understanding of the universe by opening our eyes to a myriad of previously unseen astronomical objects. Like in the past, such a transformation will be driven by large-scale surveys of these once-unobservable objects at different physical scales across cosmic space-time. Surveys like these would enable, for example, precise characterization of the atmospheres of potentially habitable nearby Earth-type exoplanets, accurate sampling of small scale structure formation of ubiquitous dwarf galaxies in the local universe, and improved constraints of the time evolution and spatial inhomogeneity of Reionization of the universe via Lyman-α emitting high-redshift galaxies.

Among these ELTs, the GMT is currently the only ELT that would provide wide-field view to allow the aforesaid exciting wide-field survey sciences. In addition, the GMT is poised to become the first ELT to receive photons from the universe. This presents a tremendous opportunity for the GMT science user communities, including Texas, to produce survey sciences that can leave lasting impacts on our humanity's understanding of the universe.

Dr. Lee will highlight these new instruments and then open the rest of the discussion for exchanging ideas on how we can support and organize this endeavor to maximize this, perhaps "once-in-a-lifetime", instrumental opportunity during early GMT operations.

Dr. Hanshin Lee is a Research Scientist for the McDonald Observatory at The University of Texas Austin. Dr. Lee has been with the Observatory for the last decade. During that time, he served as the chief optical scientist for the Hobby-Eberly Telescope upgrade and led the successful development of the Harold C. Simmons Dark Energy Optical System for the HET.

OUR SPECIAL THANKS

to the Board of Visitors for providing more than 40 years of advocacy, philanthropy, and partnership. Your 2017-2018 gifts will advance the Giant Magellan Telescope, help build our astronomy research excellence endowment to support cutting-edge research in Texas, and shape the visitor experience with upgrades to the Frank N. Bash Visitors Center. If your experience during this meeting has inspired you and you would like to discuss a gift to one of our three key funding priorities, please call 512-471-6335 or email: kinch@astro.as.utexas.edu.

RECOGNIZING
LIFETIME GIVING

We are deeply grateful to all supporters of the McDonald Observatory and the Department of Astronomy. Your support is critical in providing the resources we need to continue our mission of discovery. The following individuals are recognized for their cumulative, lifetime giving of $100,000 or more.

$500,000 or more

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NOTES

MARK YOUR CALENDAR!

2019
FEB.
15-16

2019 Winter Meeting
February 15-16, 2019

AT&T Conference Center
Austin, Texas

2019
JUL.
26-27

2019 Summer Meeting
July 26-27, 2019

McDonald Observatory
Fort Davis, Texas

McDonald Observatory
The University of Texas at Austin

The University of Texas at Austin
Department of Astronomy
College of Natural Sciences