BAA Winchester Weekend

2024 April 12-14

Biographies and Abstracts of Speakers (in order of the program)

Colin Forsyth

Colin is an Associate Professor at the UCL Mullard Space Science Laboratory. He and his team research how the Sun interacts with the Earth through charged particles and electric and magnetic fields, causing the fabulous northern lights but also posing a natural hazard to spacecraft, astronauts and technology on the ground. His research is leading to new understandings of the dynamics of near-Earth space and new ways to forecast the risks from Space Weather.

Abstract

Earth's magnetic field expands out into space, pushing against a stream of charged particles hurtling off the Sun known as the solar wind. The interaction between these particles and fields creates a cavity in near-Earth space called the magnetosphere. Until now, this edge of this cavity has only been detectable by spacecraft as they pass through it. However, unusual data seen in ROSAT data led to the discovery of X-ray emissions coming from the solar wind particles as they impact on our magnetosphere. The upcoming SMILE mission, a joint venture between ESA and the Chinese Academy of Sciences due for launch in 2025, will allow us to image these X-rays for the first time, providing an unprecedented view of the interaction between the Sun and Earth. Colin will be exploring the underlying physics and exciting new science that SMILE will bring.

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John Chuter

John has been a member of the BAA since the early 1980's and for much of that time was an anonymous member, who tried to do as much astronomy as possible whilst bringing up a family and spending a whole working career as a teacher. Upon retirement he decided to try and get elected to the Council of the BAA, in which he succeeded, at the second attempt, becoming co-archivist in 2013. Most of his working life was spent running and heading the IT department in a large comprehensive through the advent of the internet and the use of many dozens of computers on a network that had to be made secure and easy to use. This experience has shown him the value of the use of modern communication systems which are now used by most of the world's population. He is aware that many others have also realised this…….

Abstract

The BAA, since 1890, has always encouraged its members to submit observations and over the years many members have done this and then given the BAA their observations to the archive in many forms. At the 2022 Weekend John gave Part 1 of this talk where he explained why the BAA should make these very significant archives more accessible by using modern communication systems which have now become commonplace. He maintained that this archive may well be the most significant in the world, certainly in terms of life-span, with respect to the achievements of those who are essentially amateur astronomers. Thus the BAA must ensure that the wider astronomical community know about these

achievements. Since 2022 much has happened in this ambition and this Part 2 talk will explain what has been achieved so far and what more needs to be done.

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Martin Crow

Martin is an amateur astronomer who is a member of the British Astronomical Association and a trustee of the Crayford Manor House Astronomical Society Dartford. For a short while he taught the Beginners Astronomy course for Bexley Adult Education at the manor house in Crayford. He has an interest in several areas of astronomy. These include the history of astronomy, solar observing and specifically photometry of variable stars, asteroids and exoplanet transits and their timings. When clear nights permit, he observes from his home observatory on the edge of the Dengie Marshes, Essex.

Abstract

The ExoClock Project is a Pro/Am collaboration. Its aim is to observe selected exoplanet transits and compare mid transit timings to that calculated from the published literature and make correction where necessary. The purpose of the project is to support the successful outcome of the Ariel space telescopes mission. It is due for launch in 2029. It has the specific purpose of characterising the atmospheres of exoplanets.

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Robert Massey

Dr Robert Massey is Deputy Executive Director of the Royal Astronomical Society. Before joining the RAS, his career took him from undergraduate years in Leicester to PhD research in Manchester to teaching in Brighton, and local politics in London alongside eight years as Public Astronomer at the Royal Observatory Greenwich. In his spare time he enjoys running, cycling, hiking and cooking, and generally making the most of life in his new family home in Sussex. With a lifelong private and public passion for astronomy, he very much wants to avoid a world where satellites and light pollution ruin our shared heritage of an unsullied night sky. With the art historian Alexandra Loske, he co-authored Moon: Art, Science, Culture in 2019, and is the resident guest on the RAS Supermassive podcast, consistently one of the most popular in the world for astronomy.

Abstract

65 years ago the Soviet Union placed the first satellite in space. There are now around 8,000 satellites in low-Earth orbit (LEO), the region up to 2,000 km above the ground, and their deployment is accelerating. 2019 saw the launch of Starlink, a satellite constellation built and launched by SpaceX, a system that on its own could soon have more than 30,000 spacecraft deployed. With other operators we could see up to 300,000 satellites in LEO by the end of this decade. This is nothing less than a step change in our use of space. And like most paradigm shifts, it will have significant consequences. A key example is how it will affect the science of astronomy and our view of the sky. Some estimates suggest that as many as 1 in 10 'stars' visible could be satellites, and professional and amateur astronomers alike now face significant challenges to our work. As a result our community has mobilised, working at a national, international and global level to tackle a complex problem, and to try to find a balance between the positive results of boosting communications and the impact on the space environment. Robert will set out the problem, what it means for scientists and the wider public, and what we can do about it.

Nick Evans

Nick is the head of the theoretical particle physics group at Southampton University. His work centres on understanding the vacuum structure of theories with strong coupling such as QCD which underlies nuclear physics. This structure determines the masses of fundamental particles and is related to dark energy. Nick has been giving popular science talks for 25 years.

Abstract

Dark Energy: is the big confusion in the centre of physics at the moment! Astronomers observe it but don't know what it is. Particle physicists have theories of it (including the Higgs theory) but see much more of it than the astronomers need. Nick will be explaining the problem from both sides and then speculate as to where a solution to the problem might come from.

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David Arditti

David is Director of the Equipment & Techniques Section, and current President of the Association. His main astronomical interests are imaging the planets, including in non-visible wavelengths, developments in equipment, helping beginners, history of astronomy, and cosmology. He often gives talks and writes articles, and has produced a book about amateur observatories. He is also a musician, and his choral conducting skills will be on show in an event on Sunday afternoon.

Abstract

David will give a brief demonstration of the web interface of the Alnitak remote telescope system. BAA members can use some time on this excellent 17-inch telescope system, located in Spain, for free. Anyone with an observing project that would benefit may ask David for further details.

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Grant Bowskill

Astronomy has been captivating my imagination since I was a young boy, laying on an old sofa watching meteorite showers in the summer holidays. I was previously a member of Letchworth and District Astronomical Society (LDAS) many years ago and used to enjoy attending the talks with my parents. I rejoined again a few years ago primarily to enjoy the talks but also to socialise with fellow astronomers and to help promote astronomy in the local area. I've been lucky enough to be involved with various amateur astronomy projects online for the past ten years or so and for the past four years my full time job has involved amateur astronomy so I'm very privileged for my hobby and career to crossover. I'm passionate about sharing astronomy with non-astronomers – there is nothing greater than showing people Saturn for the very first time!

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Gary Palmer

Gary started off with the basics of a DSLR and some free software as a hobby, now he works at the top end of manufacturing equipment. He started off like most new comers to the wonders of the astronomy world. He now has the ability to capture a wide range of images and videos of most of the things we see in the sky: day and night on a day to day basis, in high resolution and not just solar, but deep sky and lunar. Through experience and self-taught knowledge, he has come to have a soft-spot for Solar imaging predominantly. But he enjoys all types of imaging and processing, and challenging the intended uses of equipment that he uses to produce some of the best images around. Over the years he has built up an in-depth knowledge, and good working relationships with many top manufacturers who now send in-the-making and new to the market astronomical kits from the basics to most advanced equipment for him to test for them. Once tested he is then able to provide advice and guidance as well as providing images of the equipment for publishing. He has reviewed equipment for magazines and TV programmes and have also been invited and taken part in many radio discussions worldwide on varying astronomical subjects. Gary is a 'Fellow' of the Royal Astronomical Society, and also a member of The British Astronomical Association.

Abstract

My dedication to imaging has at times been difficult as many will know that the weather and seeing conditions within the UK can be quite variable and therefore be testing when trying to capture images whether it be day or night. However, much of the equipment I use is either proto-type or for testing. I enjoy a challenge when working with all types of equipment by varying manufacturers. I have adopted a no-nonsense approach to this work which has enabled me to capture some pretty good images in a small amount of time. This has led to a great following on social media networks and I have had many images published across a variety of media including magazines and internet and have been shortlisted and won many competitions. I currently offer many workshops across the UK and abroad to provide information on equipment, image capture, and processing. I also run "Solar Outreach" programmes at events to bring some of these products from manufacturers out for the public to use and see on a regular basis. My workshops range from talking through the basics of simple DSLR imaging to the top end telescopes and cameras. I can also provide knowledge on free software packages to the advanced subscription services on the market and how to use them. With my experience I am also able to provide advice and guidance on the suitability of astro kit, providing recommendations based on a learner's needs and desire to image as well as accommodating any budgetary requirements.

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Bill Barton

Bill is deputy director of the Historical Section. He took early retirement from Networkrail as a signal engineer ten years ago. I was born in, and still live in Suffolk, where I research the history of astronomy.

Abstract

Bill will be giving a presentation to the E&T Section Meeting about two telescopes, one a 3½inch aperture Maksutov-Cassegrain by Questar of America, and the other a 63mm aperture refractor by Carl Zeiss Jena. The former has an accessory, a solar spectrometer, which is adaptable and can be fitted to the latter.

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Mike Casbon

Mike spent thirty years as a RF design engineer before becoming a research associate at Cardiff University and obtaining a PhD in advanced semiconductor characterisation techniques. Finally having some free time in 2020, a latent interest in astronomy was unleashed, resulting in a shed full of telescopes, built from scratch and digitised commercial instruments.

Abstract

This talk describes a simple and economical way to convert a Newtonian telescope into a state of the art imaging system, while retaining the option to enjoy traditional visual observations. There is some discussion of overcoming the theoretical limitations of the Newtonian, but it is essentially a practical talk.

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David Boyd

David has a scientific background and a penchant for analysing data. The emergence of CCD cameras some 20 years ago opened a door for him into variable star photometry. About 10 years later he was bitten by the spectroscopy bug, first with a Star Analyser and then with a LISA slit spectrograph. His data have been included in over 100 published papers in which he was either author or co-author.

Abstract

In this talk David will show how a spectrograph made of plastic can produce professional quality data.

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Martin Lewis

Martin is a professional engineer and amateur planetary imager and telescope builder. He images from his back garden in St.Albans, Hertfordshire, using his home-built 444mm and 222mm Dobsonian telescopes on a home-built equatorial platform. Martin has been a prize-winner in the Astronomy Photographer of the Year competition for the last six years – winning both first and second prize in the Planets section in 2018 and first prize in the Our Moon category in 2022. He is an equipment advisor in the Equipment and Techniques section of the British Astronomical Association.

Abstract

Equatorial platforms are great for providing a base that anything placed on will automatically follow the stars – be it a tripod, a camera, or a telescope. In this talk Martin, who has built his own high performance equatorial platform, takes us through the various different designs of equatorial platform and talks about a design which is optimised for planetary imaging. With this design Martin can move his 222mm and 444mm Dobsonian telescopes in the alt az way they are meant to be used, but anything they point at stays in the eyepiece or camera field. This set-up allows him to take hi resolution planetary images with his big aperture scopes and he will show some examples of the amazing images his equatorial platform has allowed him to capture.

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Don Pollacco

Don's primary research interests are within the field of extrasolar planets. He was responsible for the SuperWASP project in La Palma, which along with its sister facility at SAAO, has become the most successful ground based planet detection experiment, receiving the group achievement award from the Royal Astronomical Society in 2010. He is also a founder member of the Next Generation Transit Survey project: This concentrates the diversity between smaller planets, allowing for greater analysis and comparison between Neptune-like planets and Super-Earths. His other research interests include Space Situation Awareness and specifically Space debris. Originally this interest started as just a use for an observatory but over the last couple years he has become interested in specific problems such as the nature of debris field at geostationary orbit. This material has profound implications for our telecom satellites etc. Don recently held a Royal Society Wolfson Merit Award

Abstract

Studying small planets around solar type stars is best done from space. There are two ESA missions with this goal. The first is the ESA S mission CHEOPS (launch 2017) is a Swiss-led satellite designed to follow-up known transiting planets (e.g. NGTS or TESS planets) and detect transiting planets amongst the RV detected systems. Further in the future we have ESA M mission PLATO (launch 2026) which is designed specifically to detect and characterise habitable zone rocky planets. I am the science coordinator for PLATO. Transiting planets are the only objects we can measure accurate radii for, and hence density. This is used to compare directly with theoretical models of planet composition. PLATO will be capable of detecting planets with moons and rings etc.

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Simon Banton

Simon is an archaeo-astronomer - someone who studies humanity's eternal fascination with the sky and its expression through ancient monument alignments. He's been an astronomer for over 50 years, a Stonehenge geek for the last 30, and has appeared on both the Sky at Night and Stargazing Live! talking about the astronomy of Stonehenge.

Abstract

In this illustrated talk we'll explore why we think Stonehenge has any astronomical alignments at all, how they came to be recognised over the last 300 years or so, which ones (that are popular in the public imagination) are misconceptions and which ones (that are not generally recognised) are true and significant. Did the builders of Stonehenge have the in-depth knowledge of the movements of the Sun and Moon that some people believe, and could the monument be used to predict eclipses?

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Marika Taylor

Marika is a professor of theoretical physics and Pro-Vice Chancellor for Engineering and Physical Sciences at the University of Brimingham. She began her research career as one of Stephen Hawking's students at Cambridge University, and later worked at Harvard University, the University of Amsterdam and the University of Southampton. Her scientific research interests include gravitational physics, string theory and quantum field theory, and she also has interests in the culture of scientific research and physics inspired approaches to neural networks.

Abstract

In the last century, black holes have moved from being a disputed idea at the edge of physics to playing a central role in our understanding of the cosmos. They are also thought laboratories that illuminate theories of the fundamental laws of physics, and researchers are busier than ever trying to make sense of what they mean. Marika Taylor will present the story of black holes: what evidence we have for their existence, how they form, and what they mean for fundamental physics.

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Gillian Wright

Gillian is the European principal investigator for the Mid-Infrared instrument (MIRI) on the James Webb Space Telescope. She leads the nationally funded European consortium of institutes that have developed the MIRI instrument in a partnership with NASA's Jet Propulsion Laboratory in Pasadena, Calif. Gillian is also a research astronomer, who specializes in infrared observatories and astronomical instrumentation as well as studies of star formation and dust in interacting galaxies. She serves as the Director of the U.K. Astronomy Technology Centre in Edinburgh, Scotland and is a member of the Webb telescope Science Working Group. She's the present co-Investigator for Herschel, a recent European Space Agency mission, for the Spectral and Photometric Imaging Receiver instrument. Earlier in her career, she worked at the United Kingdom Infrared Telescope on Mauna Kea in Hawaii, where she became head of instrumentation. In 2006, Queen Elizabeth II made Gillian a member of the most excellent order of the British empire for Services to Science. In her spare time, Gillian is a keen gardener and likes growing chilies in her greenhouse. She also enjoys hiking and exploring ancient monuments.

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Stuart Eves

Stuart is an astro-nut with an MSc in Astrophysics and a PhD in satellite constellation design. He works as a consultant in the space industry, and is occasionally daft enough to volunteer to help in organising BAA conferences.

Abstract

His contribution to the agenda on Archaeo-astronomy will provide some supporting evidence from modern observations for theories about ancient astronomical beliefs that were originally derived from ancient myths and legends

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Bring and Buy Table

We will again be setting up a Bring and Buy Table for anyone who wants to sell any astronomical items which they no longer need. This will run all day on the Saturday.

Just bring anything you want to sell along to the BAA Sales stand and mark it clearly with the price you are asking for it. We will collect the money if anyone buys it during the day and pass the money on to you at the end of the day.

The BAA will not be responsible for the quality of any items sold and the items on the table will remain the responsibility of the seller. It will also be the responsibility of the seller to collect either the unsold items or the money received for them at the end of Saturday.