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monthly notes of the astronomical society of southern africa

Volume 80 Nos 9-10 **October 2021**

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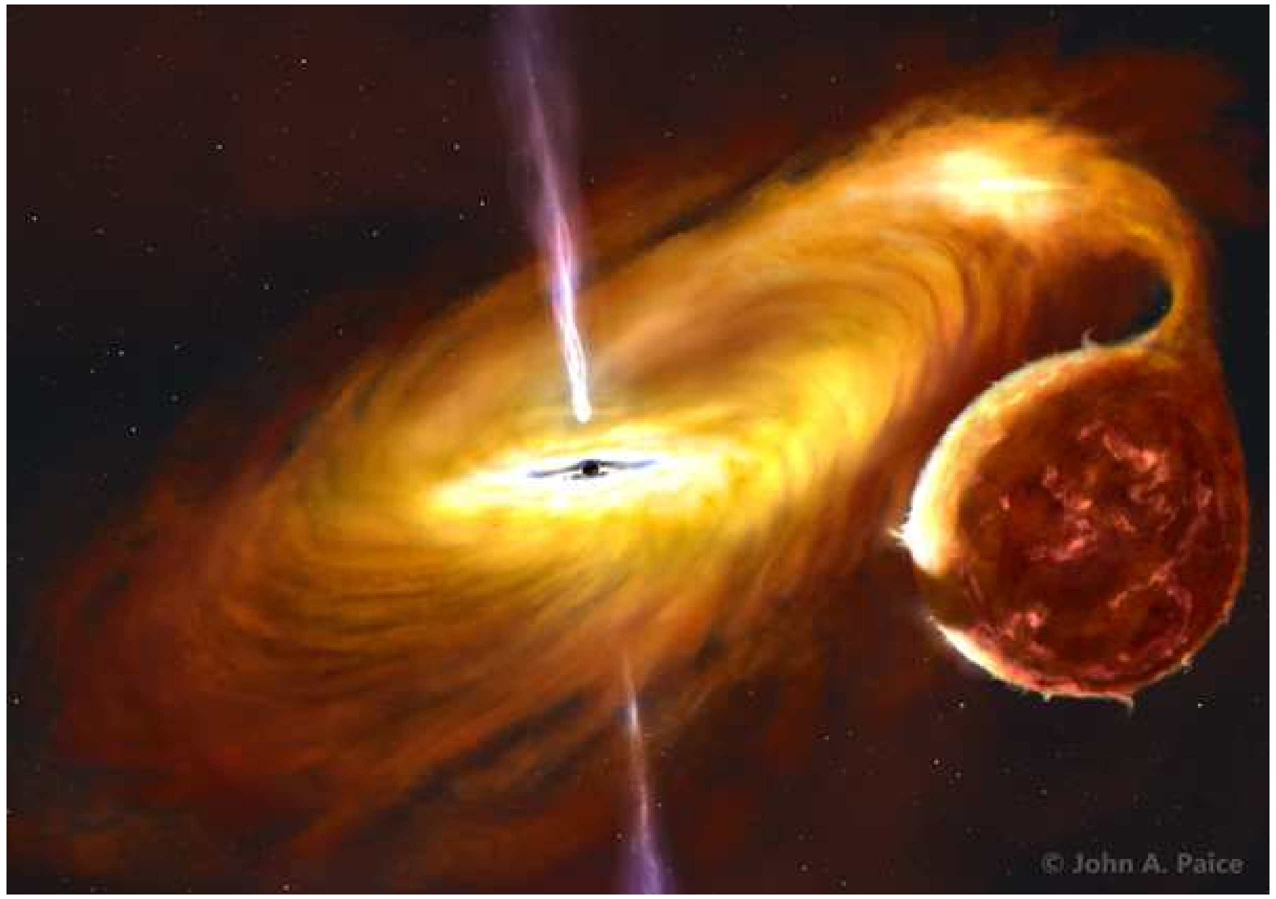

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The **Astronomical Society of Southern Africa** (ASSA) was formed in 1922 by the amalgamation of the Cape Astronomical Association (founded 1912) and the Johannesburg Astronomical Association (founded 1918). It is a body consisting of both amateur and professional astronomers.

Publications: The Society publishes its electronic journal, the *Monthly Notes of the Astronomical Society of Southern Africa (MNASSA)* bi-monthly, the annual *Sky Guide Africa South* and *Nightfall*.

Membership: Membership of the Society is open to all. Potential members should consult the Society's web page : http://assa.saao.ac.za for details. Joining is possible via one of the local Centres or as a Country Member.

Local Centres: Local Centres of the Society exist at Bloemfontein, Cape Town, Durban, Hermanus, Johannesburg, Pretoria and the Garden Route Centre; membership of any of these Centres automatically confers membership of the Society.

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About the Author

Robert H. Sanders is Professor Emeritus at the Kapteyn Astronomical Institute of the University of Groningen, the Netherlands. He received his PhD in astrophysics from Princeton University under the supervision of Lyman Spitzer. After working at Columbia University and the National Radio Astronomy Observatory, he moved to Europe. He spent his career studying active galactic nuclei (in particular, the Galactic Centre), on the hydrodynamics of gas in galaxies and, for several decades, on the problem of the 'missing mass' in astronomical systems. His previous books are *The Dark Matter Problem: A Historical Perspective (2010)* and *Revealing the Heart of the Galaxy: The Milky Way and Its Black Hole (2013)*.

Reviewed by Case Rijsdijk

Astronomical Society of Southern Africa ASSA

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Observations from amateur astronomers lead to the discovery of a warped disc around a black hole in our Milky Way

An international team of astrophysicists from South Africa, the UK, France and the US have found large variations in the brightness of light seen from around one of the closest black holes in our Galaxy, 9,600 light-years from Earth, which they interpret as being due to a huge warp in its accretion disc.

This object, MAXI J1820+070, erupted as a new X-ray transient in March 2018 and was discovered by a Japanese X-ray telescope onboard the International Space Station. These transients, systems that exhibit violent outbursts, are binary stars, consisting of a low-mass star, similar to our Sun and a much more compact object, which can be a white dwarf, neutron star or black hole. In this case, MAXI J1820+070 contains a black hole that is at least 8 times the mass of our Sun.

The first findings have now been accepted for publication in *Monthly Notices of the Royal Astronomical Society*, with lead author Dr Jessymol Thomas, a Postdoctoral Research Fellow at the South African Astronomical Observatory (SAAO). Dr Thomas worked closely with fellow SAAO colleagues Professors David Buckley and Stephen Potter, and University of Southampton (UK) researcher and former SAAO Director, Professor Phil Charles, who played a leading role in this project.

The discovery presented in the paper was made from an extensive and detailed light-curve obtained over almost a year by dedicated amateurs around the globe who are part of the AAVSO (American Association of Variable Star Observers). MAXI J1820+070 is one of the three brightest X-ray transients ever observed, a consequence of both its proximity to Earth and being outside of the obscuring plane of our Milky Way Galaxy. Because it remained bright for many months, this made it possible to be followed by so many amateurs.

Professor Charles explained that material from the normal star is pulled by the compact object into its surrounding accretion disc of spiralling gas. Massive outbursts occur when the material in the disc becomes hot and unstable, accretes onto the black hole and releases copious amounts of energy before traversing the event horizon. This process is chaotic and highly variable, varying on timescales from milliseconds to months.

The research team have produced a visualisation of the system, showing how a huge X-ray output emanates from very close to the black hole, and then irradiates the surrounding matter, especially the accretion disc, heating it up to a temperature of around 10,000K, which is seen as the visual light emitted. That is why, as the X-ray outburst declines, so does the optical light

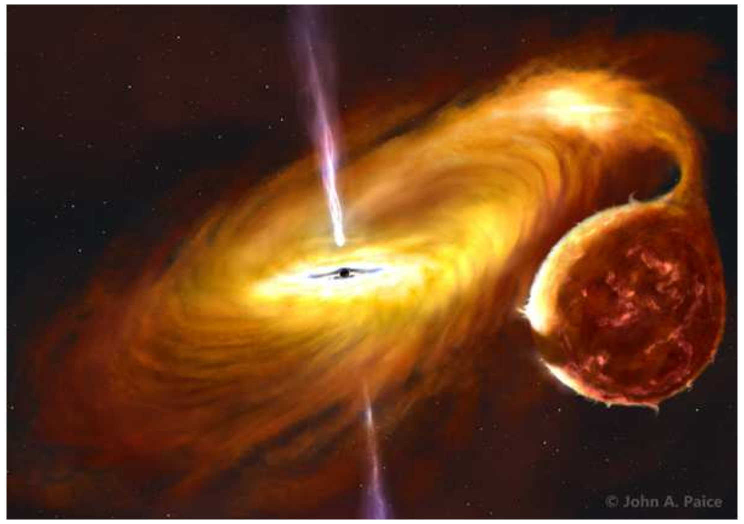


Figure: Visualisation of the object MAXI J1820+070 (Dr John Paice)

But something unexpected happened almost 3 months after the outburst began when the optical light curve started a huge modulation – a bit like turning a dimmer switch up and down and almost doubling in brightness at its peak - with a period of about 17 hours. Yet there was no change whatsoever in the X-ray output, which remained steady. While small, quasi-periodic visible modulations had been seen in the past during other X-ray transient outbursts, nothing on this scale had ever been seen before.

What was causing this extraordinary behaviour? "With the angle of view of the system as shown in the pictorial, we could quite quickly rule out the usual explanation that the X-rays were illuminating the inner face of the donor star because the brightening was occurring at the wrong time", said Prof Charles. Nor could it be due to varying light from where the mass transfer stream hits the disc as the modulation gradually moved relative to the orbit.

This left only one possible explanation, the huge X-ray flux was irradiating the disc and causing it to warp, as shown in the picture. The warp provides a huge increase in the area of the disc that could be illuminated, thereby making the visual light output increase dramatically when viewed at the right time. Such behaviour had been seen in X-ray binaries with more massive donors, but never in a black-hole transient with a

equipment have made it possible to "do physics" with cosmology! What the philosopher of science Thomas Kuhn would call a paradigm shift.

He follows this by looking at Inflation and its evolution to its current status, and then discusses the concordance model which consists of three major components, viz. Lambda, a cosmological constant denoted by Λ and associated with dark energy; cold dark matter CDM; and ordinary matter. The two principle components of this ΛCDM model, those of *dark matter* and *dark energy*, remain unresolved. Despite many years of observation after the identification of dark matter by Zwicky in the 1930s there is still no real answer as to what it is, and the model assumes the Einstein's General Theory of Relativity is the best theory explaining gravity on Cosmological scales.

At this point he has highlighted the bulk of modern Cosmology. He stresses the importance of the Cosmic Microwave Background (CMB) radiation and discusses the development of the standard cosmological model, but makes it clear that claiming that we now understand the Universe is premature.

Sanders argues that modern high resolution data from the CMB have indicated that all is not well with the standard ΛCDM model of the Universe, which is based on Einstein's gravity. Does this mean that the need arises to modify Einstein's gravity? But the new data do not impact significantly on the overall cosmological paradigm that supports dark matter and leads to confidence in the ΛCDM model, and he points out that there is a general hesitation amongst astronomers and physicists to tamper with the established laws of physics

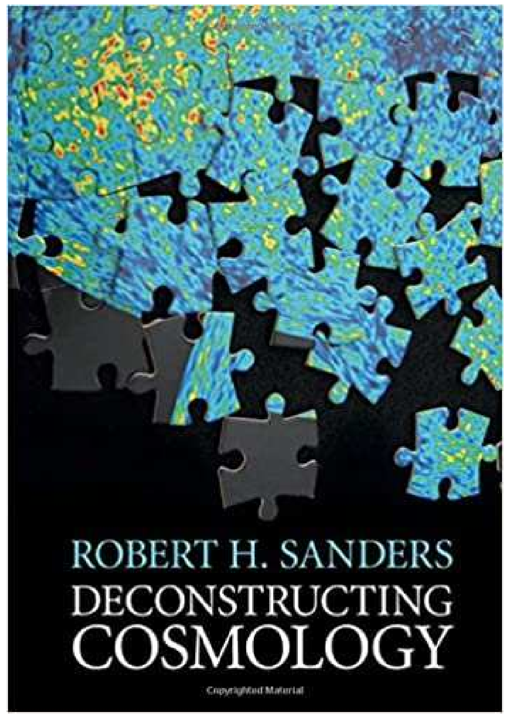
In the last part of the book he pleads for more effort and research into alternatives to dark matter by defending a theory known as MOND or Modification of the Newtonian Dynamics, a field in which Sanders has done considerable work. He sees it as an essential component of cosmology and hopes that it will encourage other alternatives. However he believes MOND to be the best one, but accepts that ΛCDM is incomplete and that further, newer ideas appear regularly. Many of these are speculative but he says we should remember that the study of the Universe includes a lot of observing, thinking, remodelling and testing of new ideas.

The book is well laid out and concludes with an excellent set of notes and references for each chapter. It is appropriately illustrated with accurate and clear graphics and black and white images. Sanders uses several outstanding analogies which are constructively built on in the course of the book and brings this difficult topic down to understandable levels, although some prior knowledge is helpful. It is thus probably worth a second reading; and maybe some chapters could be read more than twice!

To me, it is an essential book for any amateur or professional astronomer's bookshelf

Book Review - Deconstructing Cosmology

Author: R H Sanders
Publisher: Cambridge University Press; 1st ed, 7 Nov. 2017
Language: English
Hardcover: 152 pages
ISBN 9781107155268
Weight: 0.46 kg
Dimensions: 17.8 x 1.3 x 25.1 cm
Price: R1039



Chapters

1 Introduction
2 Three predictions of Physical Cosmology
3 The Very Early Universe: Inflation
4 Precision Cosmology
5 The Concordance Model
6 Dark Energy
7 Dark Matter
8 MOND
9 Dark Matter, MOND and Cosmology
10 Plato's Cave revisited

Many readers look at "deconstructing" in a negative light, but deconstructing can be defined as analysing a text or reducing it to its constituent parts to reinterpret it; and Sanders does this well, lucidly and in a sophisticated manner. His approach is to take many of the standard paradigms apart, bit by bit, and so to expose many inconsistencies and possible flaws in interpretations and biases. He does not do this critically, but uses an appropriate scientific and objective method.

He starts the book by looking at both ancient and modern answers to the question; "where does it all come from" when we look up at the night sky, and reminds us that these creation myths, and modern cosmology, are really trying to answer that question. He leads us to a new perspective: with Einstein's General Relativity we could "do cosmology" with physics, but recent developments in observational

low mass donor like this. It opens a completely new avenue for studying the structure and properties of warped accretion discs.

Prof Charles continued, "This object has remarkable properties amongst an already interesting group of objects that have much to teach us about the end-points of stellar evolution and the formation of compact objects. We already know of a couple of dozen black hole binary systems in our Galaxy, which all have masses in the 5 – 15 solar mass range. They all grow by the accretion of matter that we have witnessed so spectacularly here."

Starting some 5 years ago, a major science programme on the Southern African Large Telescope (SALT) to study transient objects has made a number of important observations of compact binaries, including black hole systems like MAXI J1820+070. As the Principal Investigator for this programme, Dr Buckley, stated that SALT is a perfect tool to study the changing behaviour of these X-ray binaries during their outbursts, which it can monitor regularly over periods of weeks to months and can be coordinated with observations from other telescopes, including space-based ones.

(From a press release)

Fireball Event 403 – 2021 September 24 – various locations Western and Northern Cape

T .P. Cooper, Bredell Observatory (Station BR)

A bright fireball was widely observed at 17h24 UT, crossing the coast around Mossel Bay and heading northwards. There was good agreement in the observations from southern locations which allowed determination of the heading, but a lack of reports from further north did not permit the endpoint with any certainty.

Francois le Roux saw the fireball from Hartenbos, descending vertically in azimuth 345° from altitude 33°, undergoing two bursts towards the end before terminating at altitude 15° with a bright flash. Colour was bright white. Brightness 4-5 times that of Venus, which was then in azimuth 268°, altitude 31°, magnitude –4.2, so $m_v \sim -6$. Duration 3-5 seconds. No sounds heard.

Several reports were received from De Rust. Diane McLean saw it descending vertically in azimuth 334°, duration 2-3 seconds before it descended below the Swartberg mountains which extend to altitude 8.2° in that direction from her location. A greenish glow followed after the fireball disappeared behind the ridge. Lanie-Marie Roets turned to see the fireball after friends exclaimed, just in time to see it before it dropped beneath the mountain ridge in direction NNW (azimuth

~330°). She estimated she saw it for perhaps 2-3 seconds and gave the colour as green. There was no disintegration. Johan de Villiers observed the fireball with a long bright tail and colours seen were yellow, orange and bright white. Facing north, the fireball came from south, moving slightly left of overhead, and dipped below the mountain ridge, following which the whole scene lit up in that direction. Hermann Niebuhr saw the fireball as a long streak, very bright with a long tail moving south to north over the Swartberg. It was orange with a green glow, and Hermann said it was 'magical'.

Pieter Fourie was camping in Groot Brakrivier, when he saw the very bright fireball as a disk surrounded by a greenish glow, falling vertically very close to north (azimuth 0°) and disappearing behind a nearby hill at altitude 7°. He specifically commented that the path was straight down and appeared to show no lateral movement.

Eddy Nijeboer was adjusting the 8-inch Meade SCT on the lawn at his Leeuwenboschfontein Observatory, while facing north his attention turned to a bright light to his right. He saw the fireball at altitude 70° in direction ENE (azimuth 60°) falling rapidly towards north, duration 3-4 seconds, and lost sight when it passed below the Swartberg mountains about 20° altitude in azimuth 30°. He was not sure how long after the start of ablation he saw the fireball. Colour was blue/green and brightness about 1.5 times that of Venus, so $m_v \sim -5$. Before disappearing behind mountains the fireball broke into four pieces, with one larger main body and three small fragments. There was no sign of explosion, no persistent glow and no sounds heard.

Alta Groenewald observed from Bloukop near Tankwa in the Karoo, seeing a yellow/green light moving in a northerly direction. She gave the time as 17h20 and said it looked very big and close and thought it was going to hit the ground directly to the north of her.

Sunel van Rensburg was driving in direction 300° west of Britstown when she saw the fireball to the left of the vehicle, appeared to be low towards the west and heading in the same direction. Large green ball, heading downwards, she thought it was just above the vehicle, duration 2-3 seconds before burning out. She specifically commented on the size, which was similar to that of a 'soccer ball', and definitely green coloured. Friends with whom she had been visiting also saw the fireball, and agreed it burned out low towards the west.

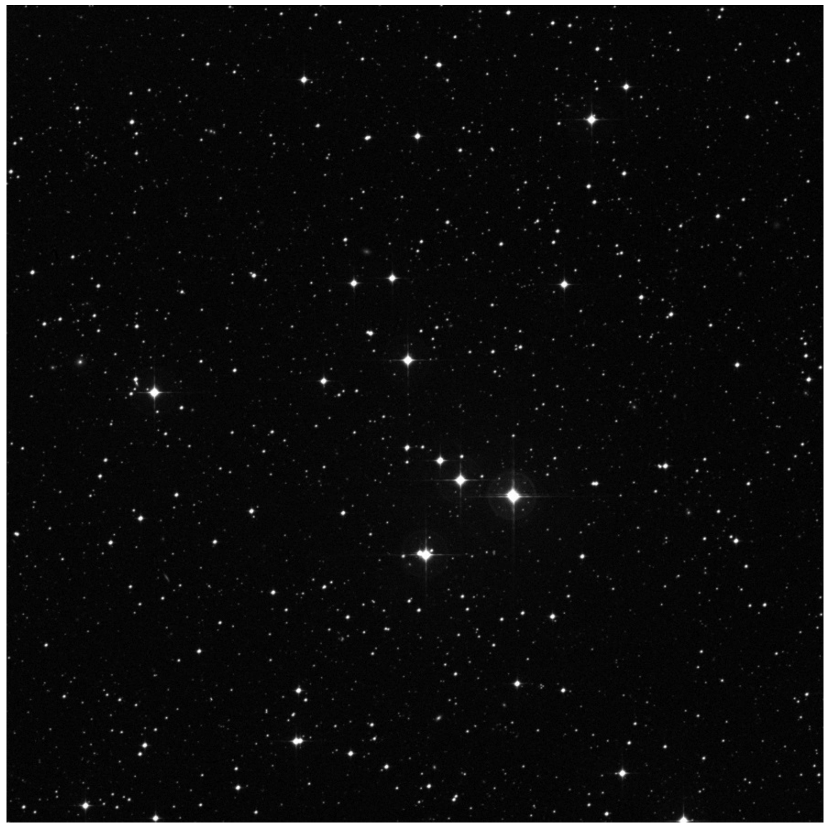
Based on the reports received, a tentative path is shown in image below. While the direction is fairly certain, the actual start and end of ablation are less well defined. The southern limit is taken from the observations of Eddy Nijeboer and Francois le

STREICHER 65 – DSH J2032.5-4518
Indus

Elongated grouping of more than a handful of various magnitude stars with the brightest star, the 8.2 magnitude HIP 101319, towards the south-west. The most southern tip star appears to have a few companion stars as seen in the photograph below. Unrelated stars can form interesting groups and bring to mind all sort of shapes to please the eye.

OBJECT	TYPE	RA	DEC	MAG	SIZE
STREICHER 65 DSH J2032.5-4518	Asterism	20h32m.30	-45°18'.18	9	11'

Picture Credit: http://archive.stsci.edu/cgi-bin/dss

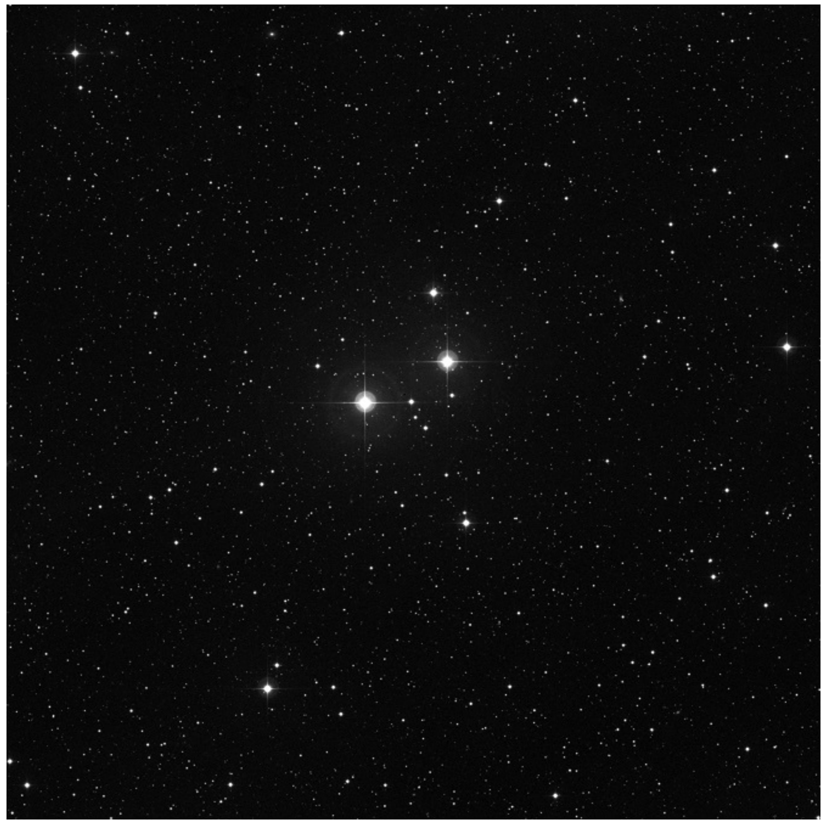


STREICHER 64 – DSH J1703.7+1333
Hercules

A small group gathering mainly towards west of the brightest star with a magnitude of 6. The group is immediately seen and quite outstanding against the fainter background star field. With a wider field of view the grouping grows slightly in size.

OBJECT	TYPE	RA	DEC	MAG	SIZE
STREICHER 64 DSH J1703.7+1333	Asterism	17h03m.47	+13°33'.33	8	14'

Picture Credit: http://archive.stsci.edu/cgi-bin/dss



Roux, though both may not have seen the actual start of the visible passage, while Sunel van Rensburg's observation that it burnt out to her west is taken as the northern limit. On that basis ablation began about 30 km west of Leeu Gamka, and terminated with a bright flash about 25km south east of Brandvlei in the Northern Cape. Length of path is about 250km, with an entry angle in the range 10-15°. While there were reports of a terminal flash, there were no reports of explosions.

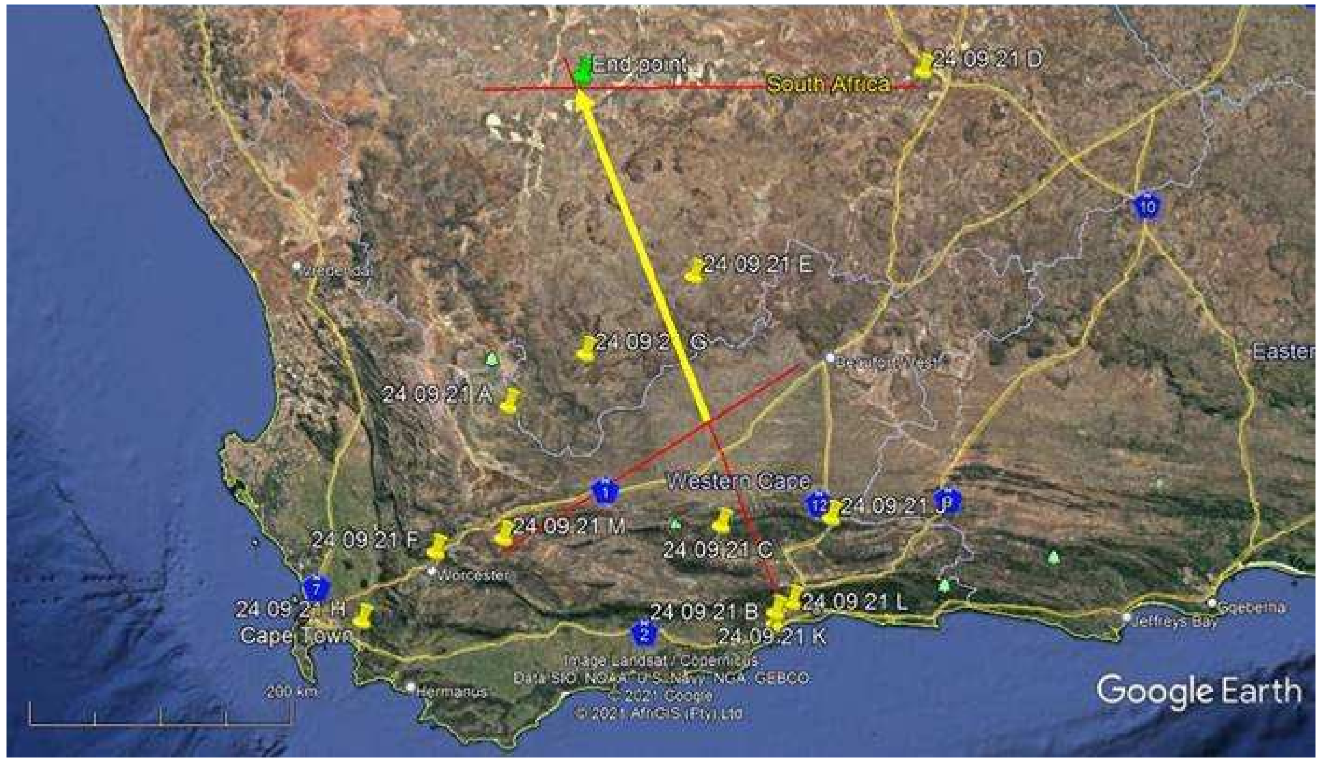


Figure: Path of Fireball, SAFC event #403, 2021 September 24

The diversity of colours seen is common for bright and energetic fireballs. The colour of meteors depends on the composition of the impacting body, its speed, entry angle and free path through the atmosphere, and the density of atmospheric gases in the layers of atmosphere it traverses. Light is emitted from excitation and subsequent decay due to mainly elemental calcium, magnesium, silicon, and occasionally sodium

Photometric measurements of the eclipsing binary star V0396 Normae.

David Blane, Henley Observatory, Henley on Klip

Introduction
Careful monitoring of close eclipsing binaries may reveal period changes, the presence of apsidal motion and other physical parameters of the system.

There are several possible causes, including perturbations by other bodies; mass transfer between the stars; tidal effects due to the elliptical shape of stars in the binary and relativistic effects.

Equipment and procedure.
Images were obtained with a 150mm f5 refractor and a Canon 1300D DSLR camera mounted on a GEM goto mounting. Aperture photometry was facilitated using the IRIS software package.

Differential extinction was not applied. Each adopted measurement was the average obtained from 10 separate field images.

V0396 Normae data
Spectral types - AOIV/V
Variability type - EA (Algol type)
Magnitude range - 8.33 – 8.88 V
Eclipse duration - 9h

Earlier observations.
SA Ottero et al. published the time of minimum (TOM) and period in the IBVS N5557 in 2004 based on measurement made by the All Sky Automated Survey (ASAS-3).

These values are listed in the Variable Star Index (VSX).
Period - 5.5354 days
Epoch - HJD2452104.552

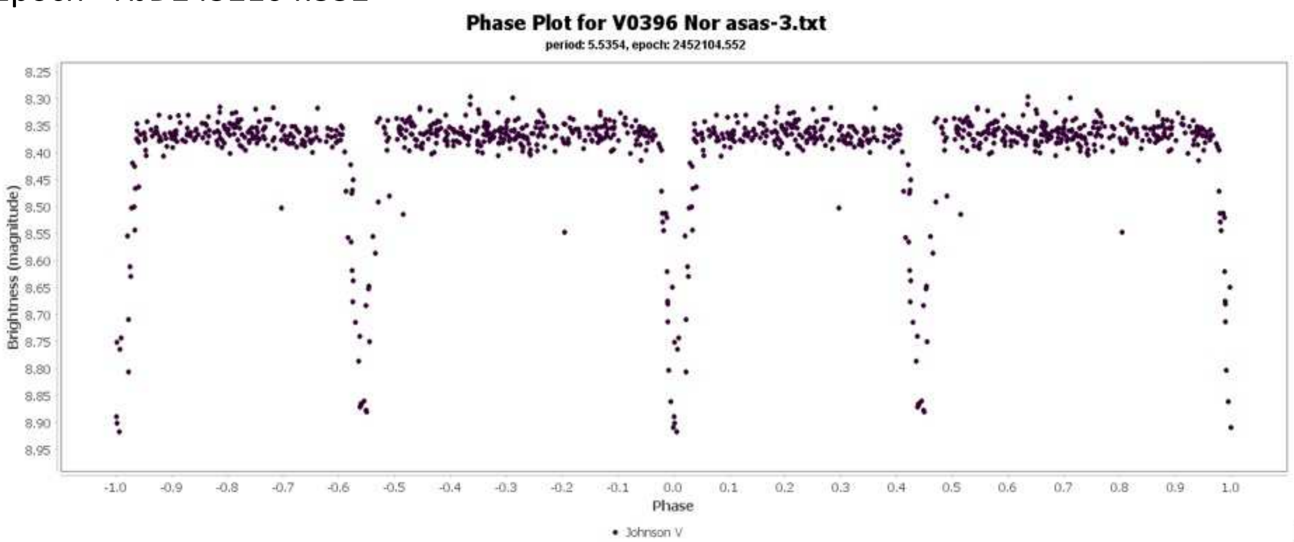


Fig 1. Asas-3 light curve

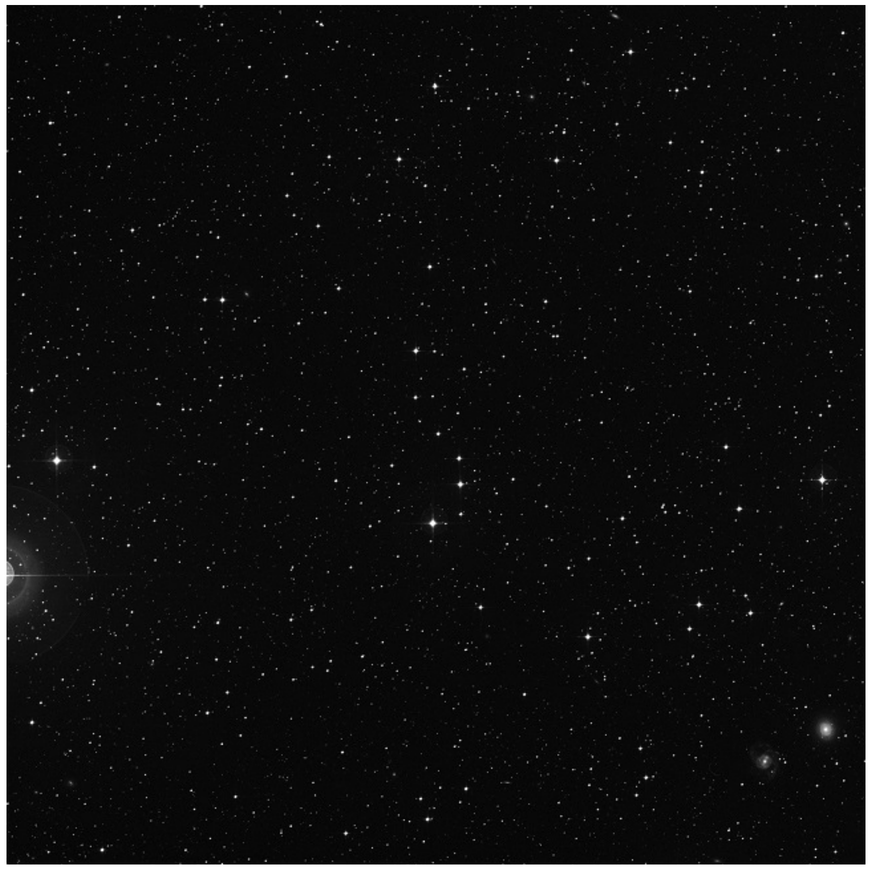
The current published ephemeris was generated using these elements.

STREICHER 63 – DSH J2040.9-5147
Indus

A lovely curvy string in a north to south direction half a degree west of eta Indi, which can be glimpsed towards the left-hand side of the photograph below. The asterism reminds me strongly of a perfect sea-horse shape with its long faint snout facing west and tail-end proudly to the south. The two spiral galaxies NGC 6937 and NGC 6935 are situated half a degree south-west and can be seen in the bottom right corner of the photograph.

OBJECT	TYPE	RA	DEC	MAG	SIZE
STREICHER 63 DSH J2040.9-5147	Asterism	20h40m.9	-51°47'.12	9.6	11.5'

Picture Credit: http://archive.stsci.edu/cgi-bin/dss

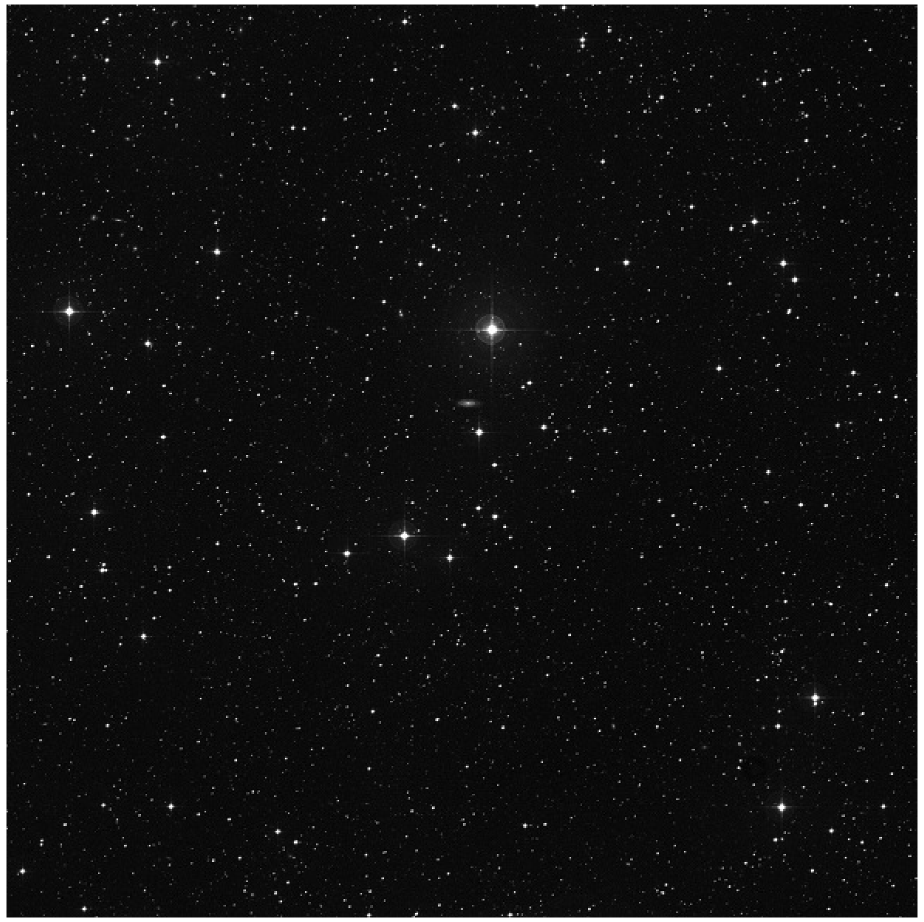


STREICHER 62 – DSH J2045.3-3517
Microscopium

This is a lovely conspicuous group of stars slightly standing out against the background star field. The bright star BX Microscopii with a magnitude of 6.8 is the crown of the group, with the galaxy PGC 65312 just 4' south as seen in the photograph below. Fainters stars towards the south complete the group in a small half-moon shape.

OBJECT	TYPE	RA	DEC	MAG	SIZE
STREICHER 62 DSH J2045.3-3517	Asterism	20h45m.20	-35°17'.54	9.2	18'

Picture Credit: http://archive.stsci.edu/cgi-bin/dss



Observational procedure

The author observed this system on 110 nights in 2020 and generated a phase plot that is shown in figure 2.

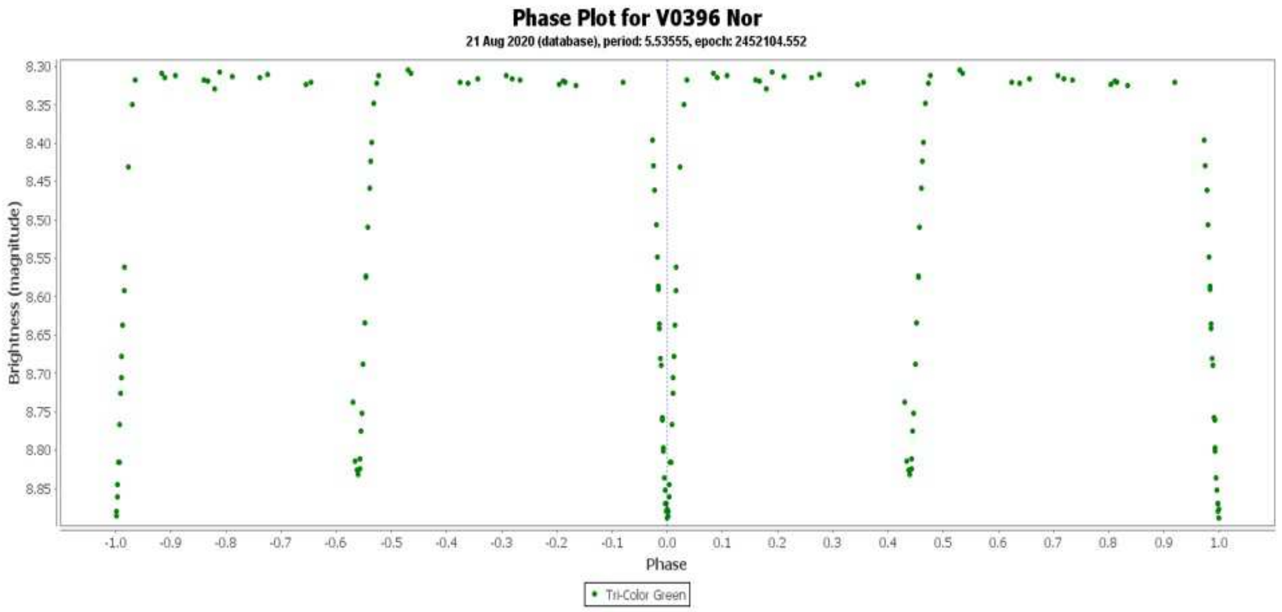


Fig 2. Phase plot.

From the phase plot it is noted that:
The timing of primary minimum suggests a period of 5.5356 days.
The primary minimum magnitude is 8.881 TG
The secondary minimum magnitude is 8.842 TG
The secondary minimum occurred at phase 0.44 which indicates the orbit is eccentric.

Time of minimum

When attempting to establish and accurate TOM it was discovered that the published ephemerides were inaccurate. This often occurs when there are limited observations of a system making it a matter of trial and error to establish when a minimum occurs.
After many observations it became apparent that the predicted primary eclipse was almost five hours early and on the night of 2020/08/12 a time series of observations over a period of four hours captured the decline to minimum and the recovery from the primary eclipse.

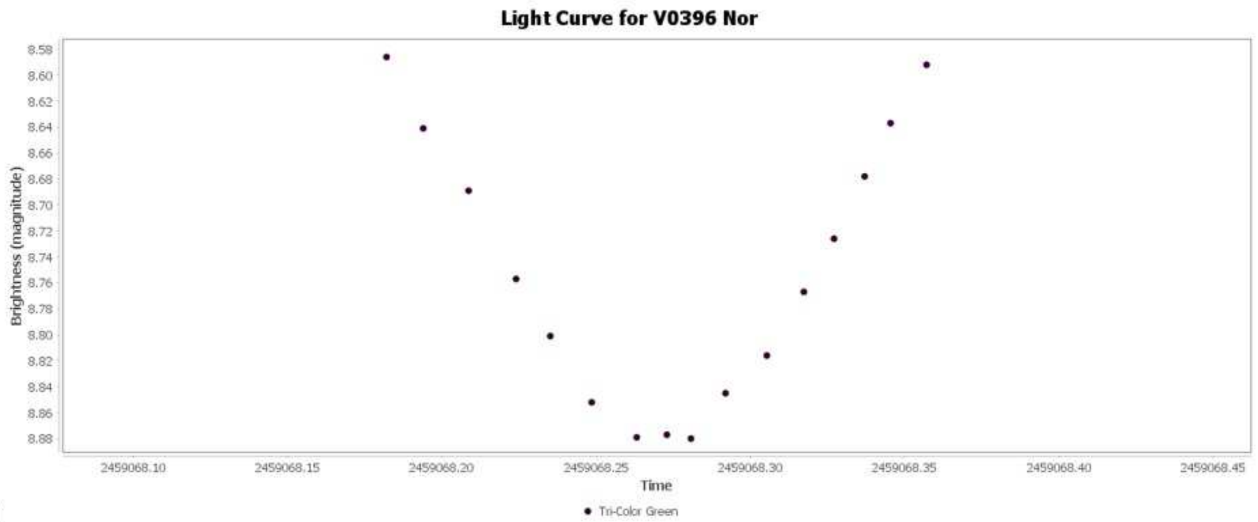


Fig 3. Time of minimum (TOM).

Note the slight increase in brightness around the time of minimum which is thought to be due to the refraction of light due to the eclipsing stars atmosphere.

Conclusion
The ephemeris generated from the asas-3 observations predicted a primary minimum at HJD2459068.0847.

The observed minimum was found to be at HJD2459068.2808 which is 4h 42m later than predicted.
This means that the earlier period of 5.5354 days was too short.

The revised period of 5.5356 days and the measured TOM epoch HJD2459068.2808 will be submitted to update the VSX and generate an up-to-date ephemeris.

Webinars

Colloquia and Seminars use form an important part of a research facility, often as a sort of pre-publication discussion or a discussion of an individual's current research, and as such it is virtually impossible to "publish" this material. However by recording the topics discussed in the form below does indicate to those, who are unable to attend, what current trends are and who has visited to do research: it keeps everyone 'in the loop' so to speak
These form an important part of a research facility, often as a sort of pre-publication discussion or a discussion of an individual's current research, and as such it is virtually impossible to "publish" this material. However, by recording the topics discussed in

Streicher Asterisms

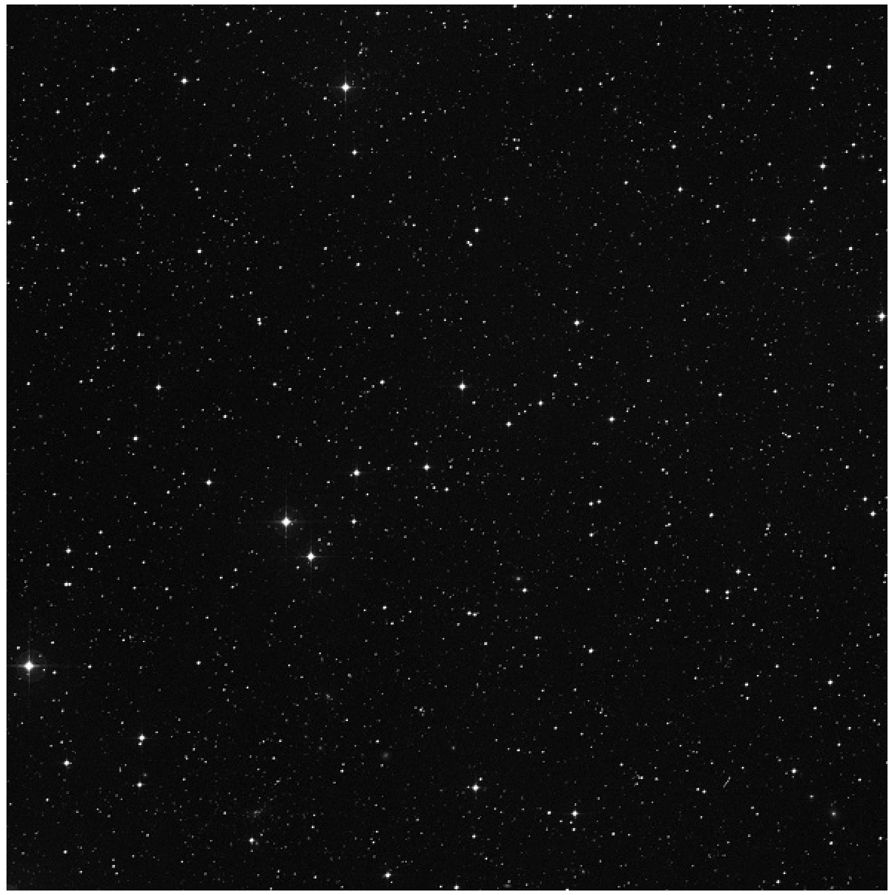
Magda Streicher

STREICHER 61 – DSH J2059.1-3446
Microscopium

A lovely elongated grouping of various magnitude stars stringing along from the north-west, with fainter stars that get brighter on the way and ending with the two brightest stars at the south-east end. The brightest of the two is HD 199672, a lovely yellow-coloured magnitude 8.6 star. Asterisms are the beauties of the starry skies – just search them out.

OBJECT	TYPE	RA	DEC	MAG	SIZE
STREICHER 61 DSH J2059.1-3446	Asterism	20h59m.08	-34°46'.00	9.5	21'

Picture Credit: http://archive.stsci.edu/cgi-bin/dss



Time: 15h00

Abstract: In the framework of general relativity (GR), we investigate magnetized massive to supermassive stars in quasi-spherical equilibrium and determine their radial pulsational GR magnetohydrodynamic (MHD) stability/instability properties. In our magnetized stellar model, a random transverse magnetic field is presumed and a key relation for magnetic flux conservation is stipulated. We identify distinct features and pertinent physical effects for magnetized and non-magnetic stars. In particular, GR MHD collapses of magnetized massive stars can give rise to black holes (BHs) in a very broad mass range and can certainly avoid the electron-positron pair instabilities to form BHs in the so-called "forbbiden zone of BH masses". This closely relates to the recent gravitational wave inferences of LIGO/Virgo experiments on binary BH masses. We also mention the dynamic or MHD formation of supermassive BHs and hypermassive BHs

the form below does indicate to those, who are unable to attend, what current trends are and who has visited to do research: it keeps everyone 'in the loop' so to speak
With the advent of CV19, these Colloquia and Seminars are being presented to wider audiences via Zoom and other virtual systems. The editor has started by identifying what would originally been "local" Colloquia and Seminars; not easy as there are now Webinars on interesting topics from around the globe! In time we will either return to the traditional Colloquia and Seminars or many will become Hybrid session.

Title: Measuring the Hubble Constant and Constraining the Nature of Dark Matter with Strong Gravitational Lensing
Speaker: Dr Simon Birrer from Stanford University / Kavli Institute for Particle Astrophysics and Cosmology.
Date Friday 3 September
Platform: Zoom
Time: 16h00

Abstract: Evidence from different cosmological probes have led to the establishment of the dark matter and dark energy paradigm. The fundamental physical origin of these phenomena remains unknown to date. Challenging this model with high-precision measurements is key in guiding theoretical models.

In my talk, I will describe how we use the phenomena of strong gravitational lensing to constrain the physical natures of dark matter and dark energy. I will describe the lensing observables and the analysis techniques we have developed to measure the small-scale dark structure and the expansion rate of the Universe. I will present the recent results in both domains and look into the near future and highlight the prospects of this technique with increasing sample size, analysis techniques and advances in instrumentation.

Title: An overview on the forthcoming solar mission from India
Speaker: Prof. (Dr.) Dipankar Banerjee, FASc, FNASc
Director, Aryabhatta Research Institute of Observational Sciences (ARIES)
Date: Thursday 9 September
Platform: Zoom
Time: 11h00

Abstract: ADITYA-L1 is the first Indian mission that is dedicated to study solar atmosphere with unprecedented spatial and temporal resolution.
The satellite will carry seven payloads and is expected to be launched in 2022 by PSLV-XL from Sriharikota.

In this presentation I will give an overview on the different payloads, with status update on the mission.

Title: The Nobel road to observing black hole systems
Speaker: Prof. Ranjeev Misra
Date: Thursday 7 October
Platform: Zoom
Time: 11h00

Abstract: For the last fifty year, humankind has been on this epic journey, where we looked for and found the most exotic objects in the Universe, black holes. In this talk, I will highlight some arguments and observational proofs that has convinced us that black holes do exist. In this endeavour, milestones were marked by several Nobel prize awards, and in this continuous journey we expect in the future to unlock the deep secrets that black holes and their surrounding still hide from us

Seminar 1: Title: Intermediate-mass black holes and their host galaxies
Speaker: Dr. Igor Chilingarian Sternberg Astronomical Institute M.V.Lomonosov Moscow State University
Date: Thursday 28 October
Platform: Hybrid; SAAO Auditorium and Zoom
Time: 11h00

Abstract: Nearly every massive galaxy harbors a supermassive black hole (SMBH) in its nucleus. The origin of SMBHs remains uncertain: they could have emerged either from massive ``seeds'' (100k-1M MSun) formed by direct collapse of gas clouds in the early universe or from smaller (100 MSun) stellar mass BHs. The latter channel would leave behind numerous intermediate-mass BHs (IMBHs, 100-100k M). Using data mining in wide-field sky surveys and applying dedicated analysis to optical spectra, we identified hundreds of IMBH candidates, which reside in galaxy centers and are currently accreting gas that creates optical signatures of type-I AGN. As of now, 16 new candidates were confirmed by X-ray emission as bona fide IMBHs hence bringing the entire sample of nuclear IMBHs to 24. Among them, we identified several objects accreting close to the Eddington limit. I will present our ongoing efforts of IMBH search and follow-up at wavelengths from X-ray to radio. I will discuss scaling relations between SMBHs and their host galaxies (MBH-sigma and MBH-Mbulge) in the low-mass end and its implications on the scenarios of SMBH formation and growth.

Seminar 2: Title: Stellar counter-rotation phenomena in MaNGA survey with follow-up observations.
Speaker: Gasymov Damir, Sternberg Astronomical Institute M.V.Lomonosov Moscow State University
Date: Thursday 28 October
Platform: Hybrid; SAAO Auditorium and Zoom
Time: 11h00

Abstract: One of the important ingredients of galaxy evolution is how galactic discs have been grown. This process is still not fully understood. Investigating kinematically peculiar galaxies hosting two counter-rotating stellar discs can shed light on the role of the external material acquisition in galactic disc formation.
Using publicly available data of the MaNGA survey we identified a sample of ~30 counter-rotating stellar disc galaxies. These galaxies were analyzed with full-spectral fitting technique NBursts (Chilingarian+2007) and non-parametrical LOSVD analysis to determine the parameters of each disks. But spectral resolution in MaNGA is bad (~70 km/s), because to carry out the correct two-component NBursts analysis to determine stellar populations in disks is almost impossible. For this we need deep follow-up observation of the sample to confirm the existence of stellar CR in these. Now we have 1 long-slit spectrum taken with the SAAO SALT (galaxy PGC 066551) and 5 from the Russian 6m-telescope. Here we present the results of detailed investigation of these galaxies.

Seminar 3: Title: Thick discs of galaxies: why and how to explore?
Speaker: Anastasia Kasparova, Sternberg Astronomical Institute M.V.Lomonosov Moscow State University
Date: Thursday 28 October
Platform: Hybrid; SAAO Auditorium and Zoom
Time: 11h00

Abstract: Although thick stellar discs are detected in nearly all edge-on disc galaxies, there is a lack of information about their stellar population properties. Analysing deep spectroscopic and photometric data for a sample of edge-on galaxies we are trying to fill this gap. I will review our current results of this project and show that thick disks often contribute more to the total disk mass budget than previously thought, even for massive galaxies. This gives us a reason to consider the multilayer nature for the analysis of disk galaxies in the arbitrary orientation.

Title: Magnetized Massive to Supermassive Stars
Speaker: Professor Yu-Qing Lou from Tsinghua University of China
Date: Friday 29 October
Platform: Hybrid; SAAO Auditorium and Zoom