

## Society News

### AGM is Getting Even Nearer

As mentioned last month, we are fast approaching AGM and election time again.

Whilst every position is “up for grabs”, there are some which will definitely need filling, these include:

- Chairman
- Treasurer
- Programme Organiser
- Membership Secretary

An Election form is attached to this issue. Please consider standing for Committee or taking on any of the other positions. I am hoping 2012/13 will be an exciting time for VAS and this is your chance to be part of the plans.

*Please help if you can...*

### New Membership Secretary

Do we have a volunteer to replace Tony Williams who is stepping down from this job after the AGM?

A couple of months ‘shadowing’ would make things easier as the Excel spreadsheet software we have used to date is getting a bit clunky - there are plans to replace it very soon but it would be very useful for Tony’s replacement to learn how it works before we make the full changeover.

### Rumours, Rumours..

There are stories circulating in Newchuch about the future of the playing fields in Watery Lane. The rumours include the possible change of use to an all-weather, “astro-turfed” football facility - maybe even floodlit!

Until we get some more information from the NPS&CA who own and administer the site, **these are just rumours** - we are currently trying to find out what is being planned.

*Brian Curd*  
*Observatory Director*

### VAS Website: [www.wightastronomy.org](http://www.wightastronomy.org)

Submissions or letters to New Zenith are always welcome and should be sent to:

**The Editor New Zenith**

**35 Forest Road**

**Winford**

**Sandown PO36 0JY**

Tel: **01983 864303** or email: [editor@wightastronomy.org](mailto:editor@wightastronomy.org)

Material for the next issue by the 6th of the month please.

### VAS Registered Office

Castle Haven Cottage, Castle Haven Lane, Niton Undercliff, Isle of Wight, PO38 2ND

The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

Registered Charity No 1046091

### Observatory Diary

<b>Monday,</b> 19.30hrs	<b>Members Only.</b> Telescope and night sky training. <b>Contact Barry Bates 01983 872979</b>
<b>Thursday,</b> 19.30hrs	<b>Members and Public.</b> Informal meeting and observing.

### Contents this Month

<i>Society News</i> .....	1
<i>Monthly Meeting Calendar 2012</i> .....	2
<i>Sky Map</i> .....	3
<i>Night Sky</i> .....	4
<i>Lecture Report</i> .....	5
<i>Impressions from TSP 2012</i> .....	7
<i>Cassini spots tiny moon</i> .....	9
<i>The Back Page</i> .....	10
<i>Nominations Form</i> .....	11

## Monthly Meeting Calendar 2012

Check the website for up to the minute information.

Travel for our monthly speakers is sponsored by:		
		
Date	Subject	Speaker
25 May	How Sir James Jeans lifted the spirits in the aftermath of the Great War	Dr Guy Moore
29 June	Binoculars for Astronomy - Richard Flux Member's Forum and Special Project Presentation	
27 July	TBA	TBA
24 Aug	Observing Galaxies - Faith Jordan <b>AGM</b> <b>Meeting Starts at 19.00hrs</b>	
28 Sep	The future is out of this world	Dr Stuart Eves
26 Oct	TBA	Owen Brazell
23 Nov	Mapping the Universe	Dr Rita Tojeiro

*All details correct at time of publication.*

### PLEASE NOTE...

## The venue for the June meeting will be as normal

Please keep an eye on the local press for any notification of traffic diversions and allow a little more time for your Journey as the Festival is sure to make a things a little more difficult to those driving into Newport from the East Cowes and Staplers directions

### VAS Contacts 2012

<b>Chairman</b>	<b>Faith Jordan</b> chairman@wightastronomy.org
<b>Secretary</b>	<b>Rebecca Mitchelmore</b> secretary@wightastronomy.org
<b>Treasurer</b>	<b>Frank Alfrey</b> treasurer@wightastronomy.org
<b>Observatory Director</b>	<b>Brian Curd</b> director@wightastronomy.org
	<b>Barry Bates</b>
<b>Programme Organiser</b>	<b>Elaine Spear</b> progorg@wightastronomy.org
<b>Special Projects</b>	<b>David Kitching</b> projects@wightastronomy.org
<b>NZ Editor</b>	<b>Brian Curd</b> editor@wightastronomy.org
<b>Membership Secretary</b>	<b>Tony Williams</b> membership@wightastronomy.org
<b>NZ Distribution</b>	<b>Brian Bond</b> distribution@wightastronomy.org

# AGM

***Please don't forget the Society AGM in August***

It's your chance to elect the committee for the next year and perhaps even stand for election yourself

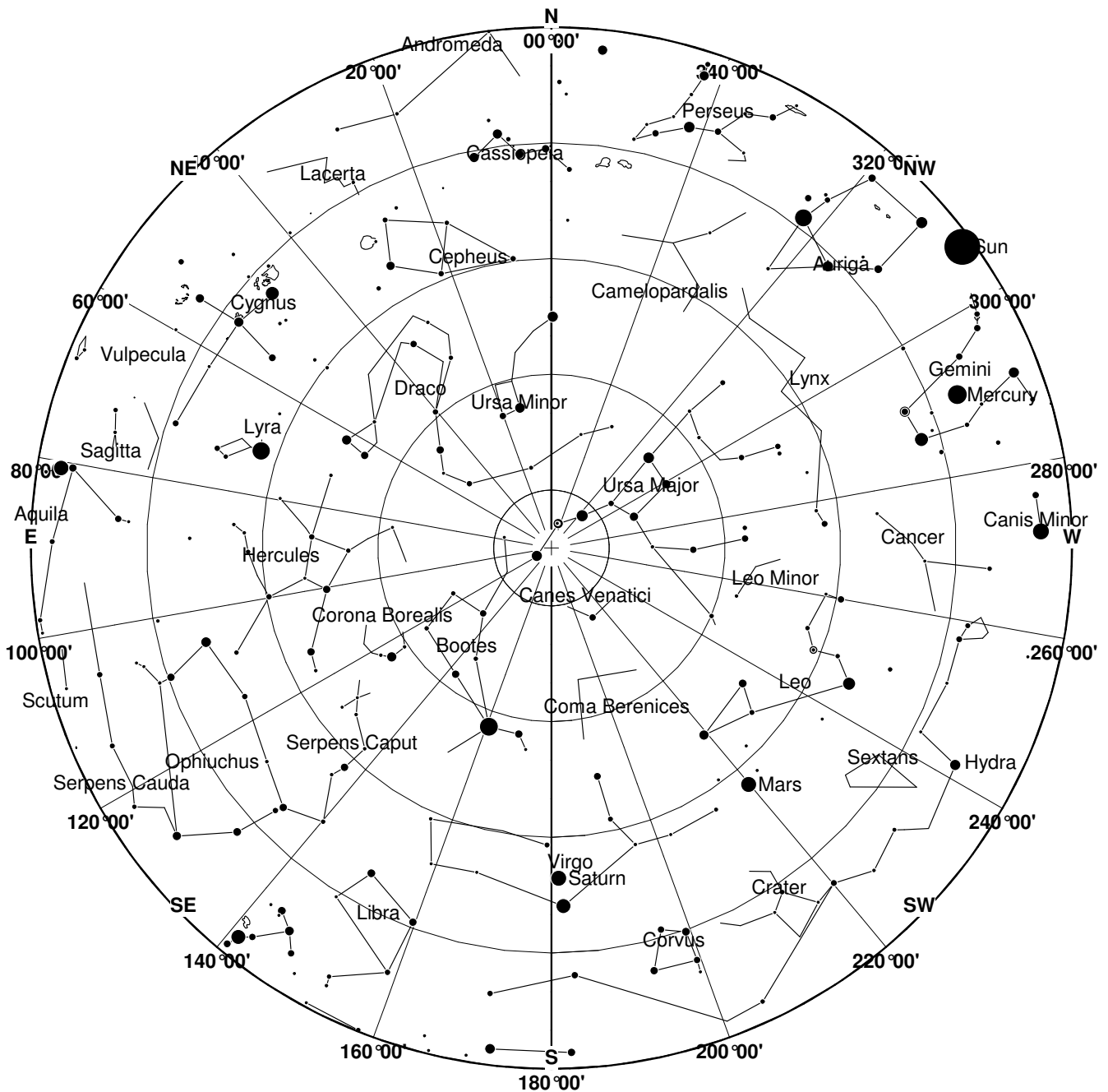
Election forms will be attached to next month's NZ

## A Demonstration of Scale

This site has gained a lot of attention recently and links to it have been sent in by several members, thanks to you all - it's well worth a look:

<http://htwins.net/scale2/scale2.swf?bordercolor=white>

# June 2012 Sky Map



View from Newchurch Isle of Wight UK - 2100hrs - 15 June 2012



**Messier 12** is a globular cluster in the constellation of Ophiuchus. It was discovered by the French astronomer Charles Messier on May 30, 1764, who described it as a "nebula without stars". In dark conditions this cluster can be faintly seen with a pair of binoculars. Resolving the stellar components requires a telescope with an aperture of 8in or greater. In a 10in scope, the granular core shows a diameter of 3' (arcminutes) surrounded by a 10' halo of stars.

M12 is about 15,700 light-years (4,800 parsecs) from Earth and has a spatial diameter of about 75 light-years. The brightest stars of M12 are of 12th magnitude.

*This article is licensed under the [GNU Free Documentation License](http://www.gnu.org/licenses/fdl.html).  
It uses material from the Wikipedia article "Messier 12"*

## June 2012 Night Sky

### Moon Phases

New	1 <sup>st</sup> Qtr	Full	Last Qtr
19th	27th	4th	11th

### Planets

**Mercury** - is low down in the western sky just after sunset for most of the month. It spends most of its time in amongst the stars of Gemini before fading at twilight in the constellation of Cancer. Look for it mid month well below the bright stars Castor and Pollux. On the 21<sup>st</sup> it is about 6.5° above and to the left of the crescent moon.

Azimuth & Elevation Of Mercury At 21:30BST					
Date	Az	EI	Date	Az	EI
5th June	304	5.5	19th	293	11
7th	303	6.5	21st	292	11.5
9th	301	8	23rd	291	11
11th	299	9	25th	290	11
13th	298	9.5	27th	289	10.5
15th	296	10.5	29th	289	10
17th	294	11	1st July	288	9.5

**Venus** - If the morning of the 6<sup>th</sup> is clear, Venus will be visible as a black dot against the Sun's disk from 04:53 until 05:53. Don't leave it until the last minute if you want to view this rare transit event. There is only an hour from when the Sun first peeps over the horizon until Venus leaves the Sun's disk. Venus takes about ten minutes from first touching the edge of the disk (third contact) until it vanishes from view (4<sup>th</sup> contact). Plan ahead and choose a location with a clear distant horizon to the NE; the Sun will be barely 4.5° above the horizon by the end of the event. The top of one of the downs overlooking the South Downs to the NE may be a good choice.

### Safety Warning

Do not look directly at the Sun even with the unaided eye. It may be sunrise and the Sun may not look very bright, but the damaging invisible infrared radiation is not dimmed as much as visible light and can still be strong enough to cause damage. This is why the Sun looks red at sunrise and sunset.

Do not look at the Sun through any optical instrument. Keep your eyes well away from the eyepiece of telescopes and binoculars.

A safe way to observe the transit is by projecting the image from a pair of binoculars or small telescope onto a piece of white card. A video camera at the eyepiece will also prevent eye damage; a camera is replaceable, a retina is not.

After the transit Venus becomes the morning star and is visible low in the east in the hour or so before sunrise.

**Mars** - Although it is fading Mars is still noticeably brighter than the stars of Leo and Virgo amongst who it is passing. Look for the red object about a third the way between Regulus and Spica.

**Jupiter** - is visible in the eastern sky about an hour before sunrise and is joined by the much brighter Venus during the second half of the month.

**Saturn** - At sunset Saturn is moving into the south western sky above the bright star Spica. This is probably the last month of this apparition before Saturn starts to become unfavourably placed for observation.

**Uranus & Neptune** - Both the outer planets are in the morning sky, but are too close to the glare of the Sun for serious observation this month. Neptune can be seen but only with difficulty, by the time it is high enough above the horizon the sky has become too bright to be able to make any worthwhile observations.

### Meteors

The double peaked Ophiuchids shower peaks on the 10<sup>th</sup> and the 20<sup>th</sup> both these peaks should yield about 5 meteors per hour.

### Deep Sky objects

#### **M4 The Cat's Eye , Globular Cluster** **RA 16h 24m Dec -26° 33' mag 7.5**

At about 7200ly this 10,000 million year old cluster may be the closest globular cluster to our solar system. The core of this cluster is rather looser than most globulars with a distinct chain of stars running across its centre.

#### **M80 Globular Cluster** **RA 16h 17m Dec -22° 59' mag 8.5**

M80 is a much smaller than M4 with a very condensed core. In 1880 a nova was observed here, one of only two novae ever seen in a globular cluster

#### **M12 Globular Cluster** **RA 16h 47' Dec -1° 57' mag 8.0**

M12 is in the centre of the constellation of Ophiuchus a rather large constellation next to the summer Milkyway who's outline is made up from 2<sup>nd</sup> and 3<sup>rd</sup> mag stars. In most clusters the smaller stars are those with the greatest numbers, they live longer and outlast the larger ones that either explode as supernovae or become white dwarves at the end of their lives. M12 appears to have a surplus of large stars and it is thought that it has lost its smaller members through interactions with the Milkyway and by the time the Sun comes to the end of its life this globular will have been completely shredded.

*Peter Burgess*

**Lecture report 27 April 2012**

**Mapping Dark Matter**

**Dr. Tom Kitching - Royal Observatory Edinburgh**

David Kitching introduced his son to a packed audience, outlining his IoW education. Tom's passion for mathematics was already apparent in Shanklin Primary, Lake Middle and Sandown High Schools, then off to Imperial College London to read physics for four years. Following his interests in cosmology to PhD level and a post-doc research fellowship at Oxford, he was honoured in 2012 with the RAS Winton Capital Award in Astronomy. He presently holds a Royal Society University Fellowship at the ROE. Mapping dark matter, designing algorithms to measure galactic distortions and obtain gravitational data, is an international job with frequent travels to France, Germany and Holland. After twenty years, Tom was very pleased to visit VAS and to tell us in non-mathematical terms, what is going on in this complex field.

The title slide had a colourful background containing filamentous structures resembling branches and leaves connected to snow crystals. This all turned into a movie simulation of the developing universe made of undulating 'cosmic scaffolding', with much information now coming from weak gravitational lensing.

Sketch 1



**What is the Universe made of?**

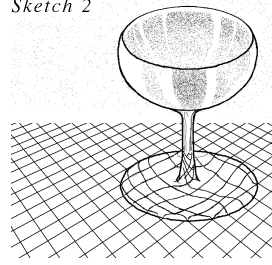
"Sounds a trivial question: answer - nobody knows, we can all go home - but it's not quite that bad." A 'pint of the Universe', Sketch 1, illustrated the visible froth on top of dark matter. The froth represents visible matter, consisting of elements from the Periodic table, made of electrons, protons, neutrons, mesons, pions, quarks, gluons and others. Some years ago, we thought the Universe was made entirely from these known particles,

but the situation is now very different. "We live in an age of maximum ignorance", "We know that we don't know anything about the Universe, with its dark energy, and dark matter". It turns out that the Universe consists only of 4% normal matter, 22% dark matter and 74% dark energy.

**The definitive evidence** for dark matter has similarities to the Earth's core which we are certain exists without being able to drill into it. It is evident in the way that stars orbit galaxies, in galaxy cluster behaviour, as well as in cosmology. Dark matter interacts approximately normally via gravity, but it doesn't self interact - two hands clapping, but made of dark matter, would just pass through each other. It is ten times more abundant than normal matter in galaxies, probably consisting of a new type of lightest supersymmetric sub-atomic particle. They might be found

in the LHC, or detected directly, or else the way we understand gravity might not be correct.

Sketch 2



**Mapping dark matter** depends on weak gravitational lensing. Gravitation bends light, with similarities to the distortions seen in the base of a wine glass. Strong lensing produces arcs and multiple galactic images seen in a well-known picture from the HST containing Einstein rings. But

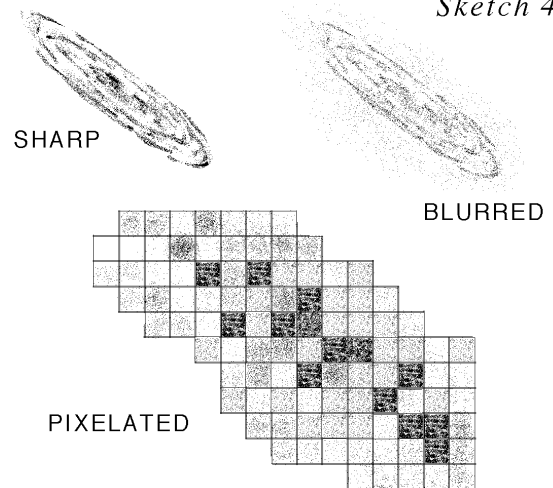
weak gravitational lensing by dark matter clumps, causes light to wander much less, so multiple images do not occur. The image of a very distant galaxy experiences 'stretch' or 'shear', Sketch 3, giving a few percent increase in its ellipticity. The distortions are too small to be apparent to

Sketch 3



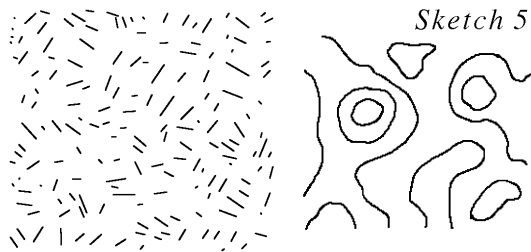
the observer's eye. Determining how much shear has occurred isn't simple as when viewing through our atmosphere, each image is blurred and pixelated, Sketch 4. This takes the project into the statistics of thousands of images, automated observation, algorithmic design and computation, aiming ultimately with *Euclid*, of getting into

Sketch 4

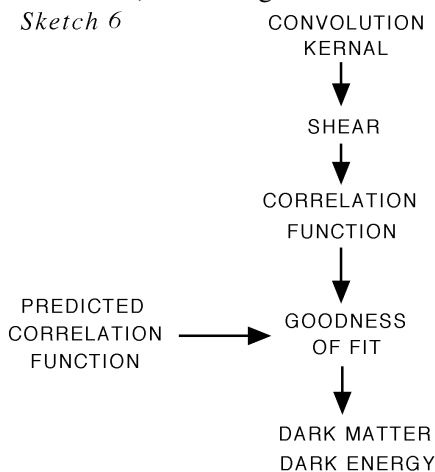


space and obtaining high resolution data not on millions of galactic images... but billions! To deal in such quantities, the measurement computer algorithms need to be fast, then we can find out how much the shapes have been changed as the light from the distant galaxies has propagated through dark matter of the Universe. This will tell us about its quantities and distribution. At first the challenge, which has been met, was using simulated data of thousands of distant galaxies with known effects, including noise, and to design computing systems to recover the known effects in the images. Then use real data.

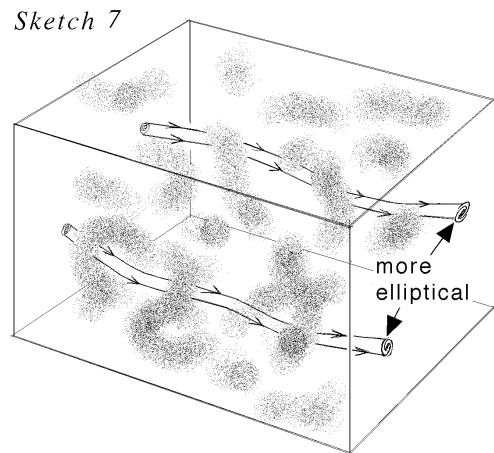
**The Canada France Hawaii Telescope Legacy Survey, CFHTLS.** This team has provided five years of data with this 4m telescope, obtaining seasonal fields in four colours, red to blue down to 24.7 magnitude - 100 million times weaker than Andromeda. The telescope covers 155 square degrees with automation providing the equivalent of 2500 yrs observing on a standard telescope.



**Processing and Results.** The raw digital data from Hawaii contains star images used to determine the Point Spread Function near to each galactic image. Processing to removes cosmic ray effects and CCD pixel glitches. Gravitational lensing analysis is done with 75 arcsec square snapshots. Having tested specially designed computer algorithms to ensure that significant statistical effects are revealed in experimental simulations, maps like *Sketch 5* are constructed using the real data. Here preferential stretching directions are indicated by little lines (like magnetized iron filings) each line formed from averages over hundreds of galaxies. The picture is convertible into line-of-sight contours of the dark matter. Overdensities are indicated by rings of shear in the 'iron filings map', underdensities by radial patterns. See *Sketch 6* for the processing scheme, aficionados of astroimaging (see p5. NZ Oct 2011) will recognize the technical terms.

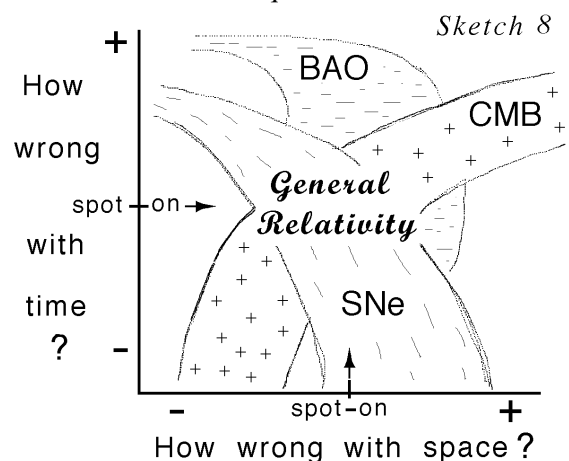


How the light arrives at Earth without atmospheric distortion is deduced first, followed by deducing how dark matter between here and the distant universe has distorted the light rays, then translating this into gravitational causes. This produces smudgy blobs about the angular size of the Moon, comparable with the positions where nearer galaxy clusters are on the sky. With spectrographic measurements of the distorting clumps, redshifts give the ranges and a 3-D diagram like *Sketch 7*. The blobs can contain a hundred times the quantity of visible matter. In



*Sketch 7*, two galaxies on the left end up appearing more elliptical on the right, as their light rays are pulled slightly away from straight lines by dark matter gravitation.

**Dark energy** causes the expansion of the universe to accelerate. Dark Energy is like anti-gravity, it could be repulsive on cosmic time scales or suggest a new type of field, or that Einstein was wrong, or there are extra string theory-like effects. Nobody knows - so this is a particularly compelling area for physics, determining the fate of the Universe. Weak gravitational lensing is the best way to detect dark energy and how it affects the growing Universe. Three experiments, SNe (Supernovae), CMB (Cosmic microwave background) BAO (Baryonic acoustic oscillations from the Sloan Sky survey) provide data meeting in the middle of *Sketch 8*, consistent so far with general relativity, but testing gravity and finding out more about the universe requires more data.



**ESA Euclid** is planned for a Soyuz launch from Kourou in 2019, to the second Sun Lagrange point L2, and the whole sky will be mapped with HST quality, in areas the size of a small finger nail at arm's length (needing 60,000 to cover the sky). *Euclid* will produce 10 petabytes of data (about 10 million CD roms). Every galaxy greater than 75% of the age of the Universe will be measured to make a dark matter map in a 20 billion light-year cube. With 850 Gbits of data arriving for 4hrs per day, in Spain or Argentina, the need for efficient algorithms and fast processing is obvious. *Euclid* will determine the nature of

gravity, whether Einstein is right, making the biggest maps of the universe both in light and dark matter, potentially having a huge impact on physics, getting closer to a unified theory.

**The discussion** varied from the interpretation of expanding space to the coincidence that we live at the right point in time when we can see other galaxies. Later on they might vanish and the Milky Way would then seem to be alone. It isn't yet known if dark matter and dark energy are two sides of the same coin, but if a dark matter component is distributed uniformly, perhaps it wouldn't be detectable by methods dependent upon fluctuations which detect 'AC' rather than 'DC' - the door might be open to having a lot more. But conservation of angular momentum during the formation of the distant galaxies might cause correlations amongst them, then their orientations might not be random and this might produce false dark matter effects - this should be remedied by acquiring further data and more modelling. The possibility that we live in a local dark matter free bubble was mentioned but by then this lecture, which had well-entertained an enthused audience, it was time to express thanks in the usual way.

It is evident from the title (and content) of Tom's PhD thesis that much simplification took place in giving this delightful lecture. The thesis title is: '*Constraining the Dark Energy Equation of State using Three Dimensional Weak Lensing*', University of Edinburgh, 2006, one professor telling David who thanked the professor for looking after Tom, that it was "the best PhD thesis in ten years". In return, the professor thanked David for sending his son to Edinburgh. The thesis and much related information (Lensfit, megaLUT) and downloadable pdf arxiv papers are accessible on Tom's website at [www.roe.ac.uk/~tdk/tdk\\_Web/tdk.html](http://www.roe.ac.uk/~tdk/tdk_Web/tdk.html).

*Dr. Guy Moore*

---

## Impressions from TSP 2012

The 2012 Texas Star Party was my fourth and, like the previous three I'd attended (in 2006, 2008 and 2010), didn't disappoint. The skies were excellent, once the haze and dust had settled out of the atmosphere in the early hours, and there was very much a 'party atmosphere'. Unfortunately numbers were down on previous years with 432 attendees at the final count, which was probably down to several factors - high fuel prices, the fires which devastated the area in 2011 (and which came quite close to destroying the Prude Ranch itself) and the poor weather in 2011, when they only had 1½ nights of observing.

I arrived on the ranch in the afternoon of Mon. April 16<sup>th</sup> with Robert Reeves of San Antonio, where I'd spent the previous few days with Bob and his wife Mary, both good friends of mine, since arriving from England on the

previous Wednesday. We set up the 'observatory', a large tent which was to hold a 25cm Orion SkyQuest Dobsonian I'd loaned from San Antonio Astronomy Association and Bob's imaging gear, as well as probably the most important item, an ice chest which held beer and water. The first night I didn't do much observing, thanks to a recurring inner-ear problem I have, which decided to inconveniently manifest itself. After a couple of hours I eventually decided that enough was enough, as I couldn't look up and looking through the eyepiece actually made me feel sick, and packed up for the night, although I did get up a couple of hours before dawn and get a reasonable session in.



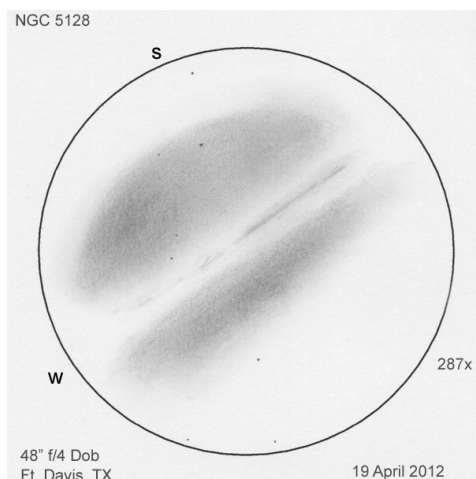
Tuesday night was a lot better as some non-drowsy formula Dramamine, which I'd bought as insurance against car sickness on the 646km, 6½ hour journey to and from San Antonio, had cured the worst of the ear problem. I'd been invited to come and use the 122cm (48-inch) scope belonging to Jimi Lowrey at Limpia Crossing, not far away from the ranch, so it was just as well the drugs worked as ascending the huge ladder while suffering dizziness would have been both dangerous and unpleasant.

We looked at a variety of objects with the giant scope, from dim exotic objects to bright showpieces which burn a hole in the back of your head when viewed with such aperture. The dim objects included Hanny's Voorwerp, which is the now-famous 'Galaxy Zoo' object adjacent to the galaxy IC 2497 in Leo Minor. The Voorwerp was very faint and, using averted vision, popped into view during moments of good seeing at 488x. It was considerably dimmer than IC 2497.

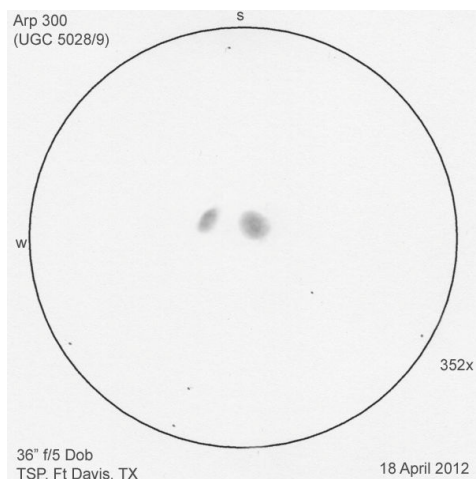
Other off-the-beaten path objects seen included Arp 270, galaxies behind the planetary nebula Abell 34, Arp 243, Arp 148 and Arp 97. We also decided to ruin our night vision by looking at M42, NGC 3242 (aka The Ghost of Jupiter), NGC 5128 (Centaurus A) and NGC 5139 (Omega Centauri). When I say 'ruin our night vision', I am only partly joking - M42's Trapezium and Omega Centauri, in particular, left an image on my retina for a good few minutes afterwards. In the case of Omega Cen, I used my left, non-observing, eye to view it - just as well, because

the view was incredible and extremely bright. This is an object I've viewed each and every time on my eight trips far enough south to be able to see it, with a variety of instruments, but *nothing* beats the view of it through a 48-inch reflector at 287x. It was totally resolved, looked three dimensional and the 'Footprint Feature' was obvious.

Another famous southern object, Centaurus A, was no less spectacular and I attempted a sketch, below.



Wednesday night was spent wandering the Upper Telescope Field, talking to people and looking through their scopes. I spent some time with Larry Mitchell and his 92cm Obsession as well as Dave Tosteson and his 81cm Dob. I did quite a lot of observing with the 92cm, viewing various objects including Arp 300 and Abell 21.



I spent Thursday and Friday nights observing with the 25cm in and around those areas which either don't get very high at home (i.e. northern Sagittarius, northern Scorpius and Hydra) or which are below the horizon (Corona Australia, southern Sagittarius, southern Scorpius, Lupus, Norma). I observed a lot of globular clusters, particularly as I wanted to finish the Astronomical League's Globular Cluster Observing Program, as well as open clusters, including the stunning area known as the False Comet in southern Scorpius, made up of the clusters NGC 6231 and

Cr 316. It's fabulous in binoculars as you see the entire region but, in a scope, it is no less lovely as you can home in on each cluster. It's one of the travesties of life that this lovely area is denied to observers from northern Europe, the northern USA and Canada along with a whole host of other southern sights, and it lies just below the horizon from the south coast of England. It's as if nature pulled a prank on observers living above 45° North ? not funny! In any case I ended up with six pages of notes on globular clusters alone, so it was a productive couple of sessions.

Friday night was also notable for observing with Al Nagler, the founder of TeleVue who, during the course of the star party, announced five new additions to the Delos eyepiece line up – 14mm, 12mm, 8mm, 4.5mm and 3.5mm – which will complete this line of eyepieces. I looked at Saturn through his 102" TeleVue refractor with a 3.5mm Delos and it was the sharpest view I have ever had of the planet. Al wanted his yearly 'Omega Centauri fix' with a larger scope so we went over to my loaned 25cm with my new (to me) 12mm Type 4 Nagler in it and got some great views – wow, Al Nagler using my Nagler eyepiece!

Before the Friday observing session, Al was the main evening speaker and his talk was about his life's work, from building a 20cm reflector while still at school, though his work at NASA building the simulators for the Apollo Moon missions (and playing the odd prank on the likes of Neil Armstrong!) before founding TeleVue, which started making television equipment before moving into optics.



Saturday was the final night of TSP 2012. During the course of the day, people had packed away their telescopes ready for an easy getaway the following morning and, after the evening talk and part 2 of the 'Great Texas Giveaway' (and, following on from my spectacular non-success in the past, I didn't win anything this year, either) people either headed for bed or for the few telescopes left standing. The Saturday of TSP isn't a night for long sessions, simply because of early starts and long journeys the following morning and driving while tired is not sensible, but it is an evening for conversation, promises to keep in touch and plans for a return in future before going to bed at 1am.



I did some last minute poking around with my 8x42 binoculars and the last object of my 2012 Texas trip was Omega Centauri. This was rather fitting because I'd viewed this with the largest instrument of the trip – the giant 122cm reflector at Limpia Crossing – and the smallest, my binoculars.

The days at TSP were usually quiet as people were either asleep after long observing sessions – and in 2012, the sessions were indeed long, with seven nights of clear skies – seeing the surrounding area or attending the afternoon talks later in the week. I had been invited to do a talk, which I did on Saturday afternoon, all about my 20 years in astronomy. Before the talk, I felt very much like doing a runner into the nearby hills but I am pleased to say it went well and people kept coming up to me saying how much they enjoyed it. What did surprise me was that I did not see people nodding off or hear the gentle sound of snoring during my talk either, which was a minor miracle considering the super observing sessions we'd had all week and that nobody was really 'with it' by week's end!

All-in-all it was a great week and, for observing, it was the best of the four TSPs I have to date attended, with clear skies all week and dusk to dawn observing, although it was a bit cold, with night-time temperatures hovering just above freezing. The daytime weather was lovely, with high temperatures around 28°C and wall-to-wall sunshine and, as a lover of sun and warmth, I left somewhat naively hoping I would be going home to a decent English spring and summer (ha! Some hope. It's not stopped raining since I got home on April 26<sup>th</sup> and, at the time of writing on May 7<sup>th</sup>, is forecast to rain for at least another week).

Jeff Davis County has recovered from the devastating fires of spring 2011, although evidence in the form of blackened shrubs remains although even these are showing green shoots, and Fort Davis has also embarked on a bit of a makeover. Gone are the rusting bits of farm machinery and litter and the town has been spruced up. It is a popular tourist area, even without an influx of upward of 400 amateur astronomers each spring, and it is very much open for business – which local people have been anxious for we visitors to point out.

I have been out to the TSP four times now and it has been worth it each time, even in years where the weather has not always completely co-operated. TSP is about observing (not the place for armchair astronomers!) but it's also about the people, fellow observers, who attend each year, people who have become friends and not just names in journals and on web sites.

I hope to be back in Texas in 2014 although, right now, the southern hemisphere is calling and that will, hopefully, be a trip for 2013.

*Faith Jordan*

## Cassini spots tiny moon, begins to tilt orbit

Cassini discovered Methone years ago, but the flyby May 20 marked the spacecraft's closest approach to the saturnian moon.

NASA's Cassini spacecraft made its closest approach to Saturn's tiny moon Methone as part of a trajectory that will take it on a close flyby of another of Saturn's moons, Titan. The Titan flyby will put the spacecraft in an orbit around Saturn that is inclined, or tilted, relative to the plane of the planet's equator. The flyby of Methone took place May 20 at a distance of about 1,900 km. It was Cassini's closest flyby of the 3km wide moon. The best previous Cassini images were taken June 8, 2005, at a distance of about 225,000km, and they barely resolved this object.

Also on May 20, Cassini obtained images of Tethys, a larger Saturnian moon that is 1,060km across. The spacecraft flew by Tethys at a distance of about 54,000km.

Cassini's encounter with Titan, Saturn's largest moon, on May 22 is the first of a sequence of flybys that will put the spacecraft into an inclined orbit. At closest approach, Cassini will fly within about 955 km of the surface of the hazy Titan. The flyby will angle Cassini's path around Saturn by about 16° out of the equatorial plane, which is the same plane in which Saturn's rings and most of its moons reside.

Cassini's onboard thrusters don't have the capability to place the spacecraft into orbits so inclined. But mission designers have planned trajectories that take advantage of the gravitational force exerted by Titan to boost Cassini into inclined orbits. Over the next few months, Cassini will use several flybys of Titan to change the angle of its inclination, building one on top of the other until Cassini is orbiting Saturn at around 62° relative to the equatorial plane in 2013. Cassini hasn't flown in orbits this inclined since 2008, when it orbited at an angle of 74°.

This set of inclined orbits is expected to provide spectacular views of the rings and poles of Saturn. Further studies of Saturn's other moons will have to wait until around 2015, when Cassini returns to an equatorial orbit.

Cassini discovered Methone and two other small moons, Pallene and Anthe, between the orbits of Mimas and Enceladus between 2004 and 2007. The three tiny moons, called the Alkyonides group, are embedded in Saturn's E ring, and their surfaces are sprayed by ice particles originating from the jets of water ice, water vapor, and organic compounds emanating from the south polar area of Enceladus.

*NASA/JPL — Published: May 22, 2012*



## Baby Galaxies Grew Up Quickly

Baby galaxies from the young Universe more than 12 billion years ago evolved faster than previously thought, shows new research from the Niels Bohr Institute. This means that already in the early history of the Universe, there was potential for planet formation and life.

The research results have been published in the scientific journal, Monthly Notices of the Royal Astronomical Society Letters.

For several thousand years after the Big Bang 13.7 billion years ago, the Universe consisted of a hot, dense primordial soup of gases and particles. But the Universe was expanding rapidly and the primordial soup became less dense and cooled. However, the primordial soup was not evenly distributed, but was denser in some areas than others. The density in some of the densest areas increased due to gravity and began to contract, forming the first stars and galaxies. This took place approximately 500 million years after the Big Bang.

Read More at: [Science Daily](#)

---

## SpaceX Launches Falcon 9/Dragon on Historic Mission

A SpaceX Falcon 9 rocket thundered into space and delivered a Dragon cargo capsule into orbit on May 22, 2012. The launch began an ambitious mission to show that the company is ready to deliver cargo to the International Space Station.

“We're now back on the brink of a new future, a future that embraces the innovation the private sector brings to the table,” said NASA Administrator Charles Bolden. “The significance of this day cannot be overstated. While there is a lot of work ahead to successfully complete this mission, we are off to a good start.”

Read More at: [NASA](#)

---

## Zapping Deadly Bacteria Using Space Technology

Technology spin-off from long-running research aboard the International Space Station is opening up a new way to keep hospital patients safe from infections.

Using plasma -- electrically charged gas -- Max Planck Institute for Extraterrestrial Physics director Gregor Morfill is developing ways to kill bacteria and viruses that can cause infections in hospitals.

“What we have with plasma is the possibility to supplement our own immune system,” says Dr Morfill.

The research began on the International Space Station (ISS), where his physics experiments have been running since 2001.

Read More at: [Science Daily](#)

## Observatory

For your own safety, when visiting the VAS observatory, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

## Articles Needed

New Zenith welcomes letters, articles or pictures related to all aspects of astronomy. Contributions to the Editor at the email or postal address on the front page.

*“With every passing hour our solar system comes forty-three thousand miles closer to globular cluster 13 in the constellation Hercules, and still there are some misfits who continue to insist that there is no such thing as progress”*  
**Ransom K. Ferm**

## Quotations

*“The boundary condition of the universe is that it has no boundary”*  
**Stephen W. Hawking**

*“Physicists and astronomers see their own implications in the world being round, but to me it means that only one-third of the world is asleep at any given time and the other two-thirds is up to something”*  
**Dean Rusk**

# VAS Officers and Committee Nominations 2012/13

For those wishing to stand for election at the AGM of the Society to be held on Friday 24th August 2012 at 7.00pm.

## **Name and Address of Nominee:**

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

## **Standing for**

- Chairman .....
- Treasurer .....
- Secretary .....
- Observatory Director .....
- Membership Secretary .....
- Program Organiser .....
- Observatory Outreach Co-ordinator .....
- Committee .....

Proposed by: .....

Seconded by: .....

Signature of Nominee:.....

## **Notes**

1. No person can be elected to more than one position.
2. Only adult fully paid-up members may stand for election (or propose or second).
3. All completed nomination forms to be received by the Secretary in writing at least 7 days before the AGM.
4. The Committee consists of not less than six members.