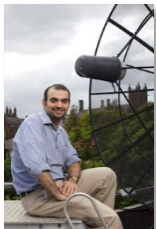


# CAASTRO

ARC CENTRE OF EXCELLENCE  
FOR ALL-SKY ASTROPHYSICS

CAASTRO NEWSLETTER, Edition #5, September 2012

## Introduction from the CAASTRO Director



The last few months have been busy! The CAASTRO team continues its vigorous program of research and outreach, as you can read about below. We are also excited to be hosting three distinguished visitors in late 2012: Roger Davies (Oxford), Chryssa Kouveliotou (NASA) and Tsu-Ching Chang (ASIAA).

The biggest event for Australian astronomy over the last few months was the long-awaited [decision on the SKA site](#), in which they awarded parts of the array to Australia and New Zealand, and other parts to Africa. I offer my congratulations and thanks to the bid team from Australia and New Zealand who worked so hard for this outcome. This decision is especially exciting for CAASTRO, since the two wide-field components of SKA Phase 1 (for which MWA and ASKAP are pathfinders) will both be located in Western Australia and are well-aligned with our goals and planned activities.

There have also been many recent meetings held across Australia. I'd like to highlight the inaugural [Early Career Researcher mentoring workshop](#), held in May 2012, for which CAASTRO was proud to be a co-sponsor. Six of the ten speakers were from CAASTRO, as were a many of the attendees. This was an insightful and rewarding meeting, which inspired everyone involved to plan their careers and to strive for work-life balance. There are a variety of future CAASTRO meetings and events coming up: the marquee event will be the [CAASTRO Annual Retreat](#) in the Pinnacles Desert of Western Australia over 25-27 Nov 2012.

Thanks to the hard work of our Theme Leaders and Theme Scientists, detailed plans for every scientific project in CAASTRO have now been developed. We are now assembling these materials into overall Theme Plans, and then into the over-arching Strategic Plan for. We appreciate the time and effort that many individuals have put into these documents.

And a reminder that proposals for CAASTRO visitors and workshops are due on 28 Sep 2012, and that proposals for CAASTRO computing time will be due 15 Dec 2012. Through these programs, we want you to use your energy and insight to seed new ideas and collaborations.

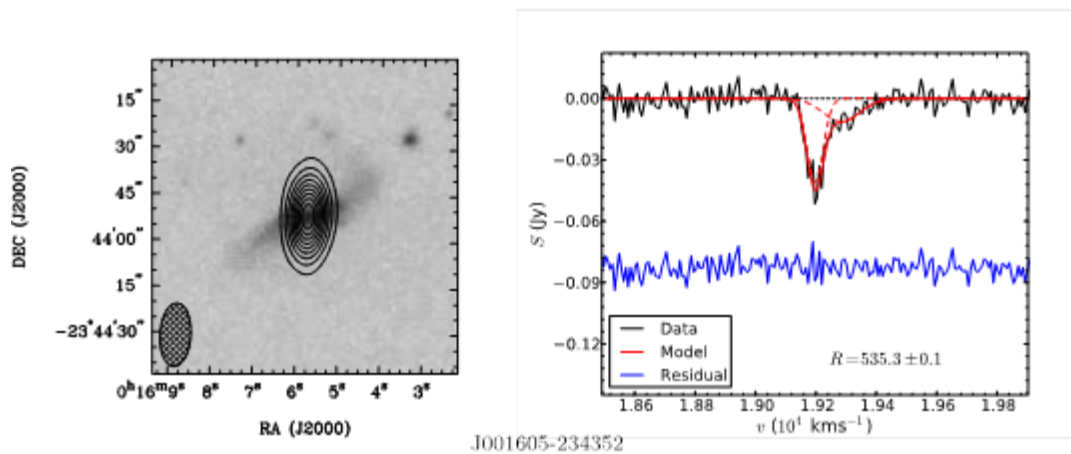
Bryan Gaensler  
CAASTRO Director

## Research Update

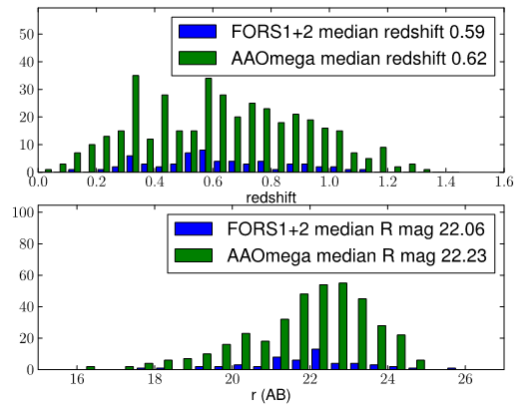
CAASTRO has had a strong start to 2012, with 28 published papers and another 10+ papers under review. Here are three brief highlights:

- In preparation for the ASKAP FLASH survey of 21cm absorption, **James Allison, Elaine Sadler, Steve Curran, Sarah Reeves and their collaborators** have conducted [a new search for cold hydrogen gas in young radio galaxies](#).

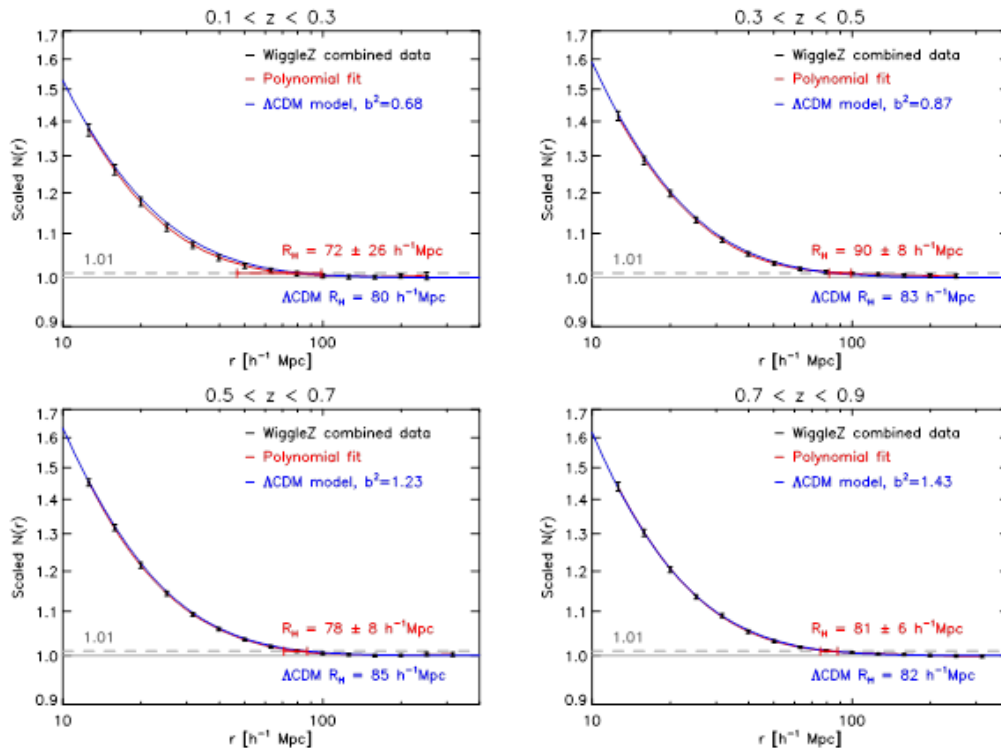
The figure below shows the team's detection of a previously unknown H I absorption feature against the source J001605-234352. The left panel shows images from ATCA observations and the SuperCosmos Sky Survey. The left panel shows the corresponding H I spectra measured by the ATCA. The data have been simultaneously fitted by a combined continuum and multiple Gaussian spectral-line model. The solid black line represents the data after subtraction of the best-fitting continuum component. The solid red line represents the best-fitting multiple Gaussian spectral-line model, and the dashed red lines represent individual components. The solid blue line represents the best-fitting residual, including an offset for clarity.



- [Chris Lidman, Karl Glazebrook, Reynald Pain and their collaborators](#) have pushed the sensitivity of the 2dF fibre-positioner and the AAOmega spectrograph on the Anglo-Australian Telescope to unprecedented levels to obtain distances to hundreds of supernova host-galaxies from the Supernova Legacy Survey. The figure at right provides a comparison of the host redshift and magnitude distributions previously obtained with FORS1 and FORS2 vs. the new host and magnitude distributions that have now been obtained with AAOmega.



- [CAASTRO student Morag Scrimgeour](#) has used the WiggleZ survey to make the largest volume measurement to date of the transition to large-scale homogeneity in the distribution of galaxies. The figure below shows scaled counts-in-spheres,  $N(<r)$ , for WiggleZ data in four redshift slices. The black error bars show the data, while a  $\Lambda$ CDM model with best-fitting bias ( $b_2$ ) is shown in blue. A fifth-degree polynomial fit to the data is shown in red. The red error bar and label show the homogeneity scale  $R_H$  for the galaxy distribution.



## Membership Update

[CAASTRO now has 114 members.](#) We welcome the most recent additions to our team:

- **James Allen**, *University of Sydney*
- **Ben Barsdell**, *Swinburne University*
- **Roger Davies**, *University of Oxford*
- **Catherine De Burgh Day**, *University of Melbourne*
- **Angela Dunleavy**, *Curtin University*
- **Syed Faisal-Ur-Rahman**, *Australian National University*
- **Akila Jeesson-Daniel**, *University of Melbourne*
- **Rachel Kennedy**, *Curtin University*
- **Andre Offringa**, *Australian National University*
- **Sinem Ozbilgen**, *University of Melbourne*
- **Glen Rees**, *University of Sydney*
- **Nastaran Rezaee**, *University of Melbourne*
- **Richard Scalzo**, *Australian National University*
- **Roselina Stone**, *Curtin University*

### CAASTRO Member Profiles

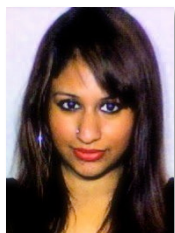


**[Dr Emil Lenc, CAASTRO Postdoctoral Researcher, University of Sydney](#)**

Emil Lenc has been a Postdoctoral Research Fellow at the Sydney node of CAASTRO since February this year. Emil's role with CAASTRO is to oversee the commissioning of the polarisation capabilities of the Murchison Widefield Array (MWA) in collaboration with groups worldwide.

**[Ms Kim Dorrell, Executive Officer, University of Melbourne](#)**

The University of Melbourne node's Executive Officer, Kim Dorrell has had an extremely interesting and varied life, and is now based within the Astrophysics Group at the University of Melbourne's School of Physics. Kim is the interface between CAASTRO's activities and the rest of the University of Melbourne.



**[Ms Ragini Singh, PhD Student, ANU](#)**

Ragini Singh is a PhD candidate in the Dark Theme and is based at Mount Stromblo Observatory, Australian National University. Ragini expects to complete her PhD on *Quasars and The Transverse Proximity Effect* this year.

## Upcoming Visitors to CAASTRO

- Roger Davies, University of Oxford, 1 Sep – 31 Dec 2012. Roger will visit the University of Sydney, AAO, Swinburne, ANU and UWA, and will work with the SAMI team on developing strategies to map the clusters and groups of early type galaxy population as part of the SAMI survey.
- Chryssa Kouveliotou, NASA, 18 Nov – 18 Dec 2012. Chryssa will work on Dynamic Universe activities at the University of Sydney. She is interested in developing plans for simultaneous observations of high-energy transients detected with the Fermi Gamma-Ray burst monitor (GBM) using southern radio telescopes such as the ATCA and MWA.
- Tsu-Ching Chang, ASIAA, 12 Nov – 30 Nov 2012. Tsu-Ching will visit the University of Melbourne, Swinburne University and CSIRO for talks and collaboration on 21cm cosmology, large scale structure and gravitational lensing.

**CAASTRO members interested in meeting these visitors should email [coo@caastro.org](mailto:coo@caastro.org)**

## CAASTRO Public Outreach & School Engagement

- **Telescopes in Schools:** We congratulate CAASTRO Chief Investigator Rachel Webster and Program Administrator Jacinta den Besten of [Telescopes in Schools](#) for a highly successful transit of Venus activity and great media coverage. CAASTRO supported the program with gift packs for the students at observing sessions and winners of program competitions.
- **National Science Week:** CAASTRO participated in National Science Week (11-19 Aug 2012) by offering a variety of public outreach and student engagement activities. We held [a series of free lectures](#) at Mount Burnett Observatory, [organised a telescope tour to Siding Spring Observatory](#), and helped developed [a new museum exhibit in Geraldton](#) that highlights the engineering and science aspects of the Murchison Widefield Array.
- **CAASTRO in the Classroom:** [CAASTRO in the Classroom](#) continues to be very successful, with Greg Madsen, Sean Farrell, James Allison, Martin Bell, and Fang Yuan continuing their terrific work with NSW high-schools. Over 300 students have attended these sessions so far this semester.

## Events and Workshops

### Recent Workshops

- [Wide-Field Optical Astronomy from Antarctica](#), U Sydney, 13 Aug 2012

### Upcoming Events

- [GPU Training Workshop](#), UWA, 8-9 Oct 2012
- [Women in Astronomy Workshop](#), Swin, 10-11 Oct 2012
- [EoR Global Signal Workshop](#), U Sydney, 19-21 Nov 2012
- [CAASTRO Annual Retreat](#), Cervantes WA, 25-27 Nov 2012
- [Reionisation in the Red Centre: New Windows on the High Redshift Universe](#), Uluru NT, 15-19 Jul 2013



*Contributions from CAASTRO members are welcome for future editions;  
please contact [Ruth Jeffries](#) with stories or suggestions.*