EUROPEAN ASTRONOMICAL SOCIETY
NEWSLETTER
Issue 46. June 2014

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EDITORIAL

If all goes according to plan, the present newsletter will have reached the mailbox of the EAS members just before the commencement of EWASS 2014. This year the European Week of Astronomy and Space Science is taking place in Geneva, a short distance away from the headquarters of our Society. The program is exciting with over five hundred scientists and students expected to attend the 10 Symposia and 7 Special Sessions and Meetings that have been planned. A number of social events, including a visit to CERN, as well as the cosmopolitan atmosphere of Geneva will certainly satisfy even the most demanding participants.

Furthermore, the meeting will include the award ceremonies and associated talks of the Tycho Brahe and MERAC prizes, as well as the L. Woljier Lecture, established by our Society. More details about the 2014 laureates can be found in the newsletter along with the usual news from the EAS Council, the Opticon and the Radionet3 networks.

We would also like to take this opportunity to inform our members and Science Book Publishers that future issues of the newsletter will include reviews of astronomy related books that would be of interests to our readers. This has been done already in the past, even though rather infrequently. We would like to include a regular dedicated book review section in all our future newsletters. If you have a recent title that you think it's worth reviewing, please contact the Editor of the Newsletter.

Finally, we would like to draw the attention of our readers to an interesting article regarding PhDTree a crowd-sourced public initiative to document the academic family tree of PhDs worldwide.

Vassilis Charmandaris
University of Crete
& National Observatory of Athens, Greece

NEWS

NEWS FROM THE EAS COUNCIL

The EAS Council met on the 23rd and 24th of January 2014 in Rolle (Switzerland) where several matters were discussed. Highlights of the meeting can be found below.

1. New Council Members
The secretary announced the new members of council, who will take office in July 2014 at EWASS. They are:

Thierry Courvoisier – President (re-elected)
Emmanouil Angelakis – Vice President
Johan Knapen – Treasurer
Coralie Neiner – Councilor
Olga Silchenko – Councilor
Eline Tolstoy – Councilor.

2. EWASS
As we all know EWASS 2014 will be held in Geneva 30 June – July 4 2014. It has been decided that EWASS 2015 will be held in Tenerife. The professional agency, KUONI, who is organizing EWASS 2014, will also be helping with the organization of EWASS 2015.

3. EAS Council Working Groups
Two new working groups (WG) will shortly be set up: (i) a WG on Ethics led by Pierre Lean; (ii) a WG on Astronomers outside Academia. The Council looks forward to hearing the reports from these two WGs in due course.

Serena Viti, Secretary of EAS

NEWS FROM OPTICON

The OPTICON contract continues to proceed smoothly with steady progress on the various work packages. A recent highlight was a workshop at the UKATC in Edinburgh on

Adaptive Optics Tomography which attracted a diverse group from across Europe and beyond. The conference website can be found at ***http://www.roe.ac.uk/workshop/tomography/*** and you can use that to follow up with speakers and the meeting organisers for more information.

The new OPTICON activity on Time Domian Astronomy led by Lukasz Wyrzykowki from the University of Warsaw will organise the Fifth Gaia Science Alerts Workshop at the University of Warsaw in September, see the webpage at ***http://www.astrouw.edu.pl/gaiaworkshop2014/*** for more details. Also scheduled in September is an Observing School and Awareness Conference to be held at the Bulgarian Rhozen observatory and in the capital Sofia. This activity is organised by Michel Dennefeld of the IAP Paris. Details can be found in the news item at ***http://www.iap.fr/opticon/***. A related activity regarding telescope training is the La Caille scheme which is intended to support extra observers to join established astronomers on telescope visits in order to gain practical experience. This requires both a cadre of altrusistic PIs who are willing to host and train a extra observer and interested students wishing to assist in a run. The extra costs will be covered by OPTICON, but potential participants must register at ***http://www.iap.fr/opticon/la_caille/***.

On the interferometry side the next call for the Fizeau exchange programme, which provides funds for working collaborative visits between laboratories engaged in the European Interferometry Initiative will close on Septmber the 15th, look for details at ***http://www.european-interferometry.eu/fizeau-program***.

The OPTICON Common Time Allocation Committee continued its work, with the February 2014 call for 2014B being adjudicated by a meeting in Cambridge on April 29th. The call attracted 68 proposals (although 3 were disallowed for failing to meet the rules concerning team membership) and of these 19 projects were awarded time. The standard was high, with only one proposal rated below the science quality cutoff, so the large number of rejections was driven simply by lack of resources to support as many projects as we would like to. Some turnover of the TAC is expected before the next meeting and a couple of potential candidates have been identified.

OPTICON is not directly involved in the present Horizon 2020 call as our existing FP7 contract runs until the end of 2016. However, we are working on long term plans for a future call which might allow the project to be extended into Horizon 2020, watch out for more details in a year or so.

For more information visit the OPTICON website at ***www.astro-opticon.org*** or contact the project scientist John Davies ***(john.davies@stfc.ac.uk)***.

News from RadioNet3

RadioNet3 Board meeting at ESO Garching

Members of the RadioNet3 Board met at ESO Garching on 20 March 2014. The meeting, opened by a welcome address by the ESO Director General Tim de Zeeuw, took place in the new impressive ESO meeting room. The EC Project Officer Sebastian Jester contributed to the discussion with a presentation of the new EU Framework Programme for Research and Innovation Horizon2020 (2014-2020). The main aim of the meeting was to verify the status of the RadioNet3 project following the Mid Term Review of November last year.

At a coffee break, the 10th anniversary of the EC funded RadioNet project was celebrated with a short unofficial ceremony. RadioNet was the first time the entire European radio astronomy community, along with partners in Australia, Korea, and South Africa, had come together to work on a focused project in a coherent manner. It has been a significant success, recognised as such both within the European astronomical community and by the award of about €10M for each of the three RadioNet projects, in FP6 and twice in FP7.

TransNational Access programme – Open sky policy

The RadioNet3 TransNational programme offers access to several radio telescopes and arrays, owned and run by European organizations, covering an unprecedented range of wavelengths, from 10 MHz to 1 THz, and resolving power from minutes to milliarc-seconds. The TNA programme removes technical, financial and logistical barriers and thereby allows European astronomers to take the full advantage of the world leading facilities. The European users are provided with a high level professional support covering all aspects of the use of facilities, from preparation through observations and to data interpretation.
http://www.radionet-eu.org/radionet3wiki/doku.php?id=tna:tna

TransNational Access programme highlights

Through RadioNet3 TNA programme, astronomers have recently achieved important results. It is worth to mention the following:

- *Robust Constraint on a Drifting Proton-to-Electron Mass Ratio at z= 0.89 from Methanol Observation at Three Radio Telescopes*
  A limit on a possible cosmological variation of the proton-to-electron mass ratio was derived from methanol (CH_3OH) absorption lines in the benchmark PKS1830-211 lensing galaxy at redshift z=0.89 observed with the Effelsberg 100-m radio telescope, the Institute de Radio Astronomie Millimetrique 30-m telescope, and the Atacama Large Millimeter/submillimeter Array. The Effelsberg observations are based on ongoing RadioNet3 Transnational Access eligible projects 19-11, 86-12. More at *Bagdonaite et al., Ph.Rev. Letters 111, issue 23, 231101 (2013)*

- *No evidence for a counter-jet in the TeV-emitting radio galaxy IC 310*
  The nearby active galaxy IC 310 (z = 0.019) is one of only four radio galaxies detected at very high gamma-ray energies above 100 GeV so far. In contrast to its previous classification as a head-tail radio galaxy, its variability at X-ray and gamma-ray energies and its compact one-sided parsec-scale radio jet suggest a blazar-like nature. The EVN observations (based on the RadioNet3 Transnational Access eligible project EE009, led by Dorit Eisenacher, University of Würzburg) have thus helped to estimate a key parameter relevant for the understanding of the enigmatic high-energy source in IC 310. More information at Eisenacher et al. (@arXiv:1308.0433)

Travel support for advertising RadioNet3 science

The RadioNet3 work package QueSERA (addressing Questions on Structuring European Radio Astronomy (see **www.radionet-eu.org**), is providing opportunities for travel support in two categories:

1. Colloquia at astronomy institutes or national astronomy conferences in countries with little radio-astronomy tradition.

2. Talks at conferences with astrophysics topics that have made limited use of radio-astronomy techniques (so far).

The aim of these is to entertain fellow astronomers who have typically not used RadioNet facilities with the excitement of modern Radio Astronomy. Proposals should be sent to Aukelien van den Poll at JIVE, **poll@jive.nl**. Consultation is possible through the same e-mail address.

Financial support for conferences and schools

RadioNet3, through the Networking Activities Science Working Group, New Skills, MARCuS, and ERATec provides financial support for the organization and the participation, in particular of young astronomers and engineers, to conferences, workshops, and training schools. The main goal of the SWG is to ensure a central coordination in the dissemination of knowledge and scientific results among the astronomical community. Through New Skills RadioNet3 aims at to equip astronomers to exploit current and future radio astronomy facilities. MARCuS supports access to the ALMA Regional Centre (ARC) node expertise. ERATec aims at to increase communication, training and scientific interaction between engineers and scientists involved in the development and operation of radio-astronomical instruments, a key issue in keeping these facilities at a world-class technical level.

RadioNet3 at EWASS2014

RadioNet3 will organize a booth at EWASS 2014 in Geneva (June 30 – July 4, 2014). Participants to the Conference are kindly invited to visit the booth for information and exchange of opinions on the RadioNet3 project.

Future events supported by RadioNet3

Several events will be financially supported by the RadioNet3 in 2014:

- *"Extreme astrophysics in an ever changing Universe"*, Lerapetra, GR, 16-20 June 2014 http://www3.mpifr-bonn.mpg.de/div/jhs/Welcome.html
- *"Exploring the low-frequency radio sky in the SKA era"* (EWASS2014), Geneva, CH, 30 June-1 July 2014 http://eas.unige.ch/EWASS2014/session_display.jsp?id=S9
- Workshop *"Submm astronomy in the ALMA era"* (EWASS2014), Geneva, CH, 3-4 July 2014
- *"40th COSPAR Scientific Assembly"*, Moscow, RU, 2-10 August 2014 https://www.cospar-assembly.org/
- *"EATing VLBI"*, Bologna, IT, 25-27 September 2014
- *"44th Young European Radio Astronomers Conference (YERAC)"*, Toruń Centre for Astronomy at the Nicolaus Copernicus University, Poland, 8-12 September, 2014 http://yerac2014.astro.uni.torun.pl/
- *"14th European Solar Physics Meeting"* ESPM-14, Dublin, Ireland, 8-12 September 2014 http://www.espm14.ie/
- *"12th European VLBI Network Symposium"*, Cagliari, Italy, 7-10 October, 2014 http://evn2014.oa-cagliari.inaf.it/EVN2014/

RadioNet3

The EC funded project RadioNet3 coordinates a partnership of Europe's leading radio astronomy facilities. Bringing together 27 partners, RadioNet3 is recognized by funding agencies and international project consortia as the European entity representing radio astronomy. E-mail rn3@mpifr.de – More on **http://www.radionet-eu.org/**.

Franco Mantovani

RadioNet3 Project Scientist

PhD Tree – An academic family tree

We would like to bring to the attention of the EAS members PhDTree, an initiative to document the academic family tree of PhDs worldwide, both past and present. The goal of the project is to build the most comprehensive academic genealogy Wiki for every discipline.

The project is a crowd-sourced wiki website: anyone can create new profiles or edit existing profiles. The interface is intuitive and very easy to use.

The PhDTree database, which includes already over 2.5 million records, with almost 100,000 records in the Physics category, is populated with most historic figures as well as mostly scientists from north America and the UK. This is due to the publicly available records of the PhD holders from the accrediting institutions in these regions. Currently there is a lack or entries of PhDs awarded from institutions across continental Europe.

We would like to encourage all members of the European astronomical community to consider visiting the web page of the project at **http://phdtree.org** to trace and update their personal academic genealogy, as well as their ones of their friends and colleagues. You may also want to consider suggesting to the administrators of your department to include the past astronomy PhDs.

EDP Sciences – EAS Organizational Member

The EAS is pleased to welcome EDP Sciences as a new organizational member of the society.

sciences

Publishing partner of the scientific communities

EDP Sciences is a publishing house owned by learned societies and run by publishing professionals. It receives support from several scientific communities and gives authors all the tools and services they need to showcase their work whilst circulating their articles and books as widely as possible.

EDP Sciences provides technical and sales support for the launching and growth of scientific or technical journals or professional magazines on an international scale. Its online delivery platform allows editorial content to be linked with other journals via CrossRef© and with indexing sites (Google Scholar, PubMed, MedLine, NASA/ADS, etc.) in order to maximize the visibility and citations of articles.

EAS Prizes

European Astronomical Society 2014 Prizes

The European Astronomical Society awards a number of prizes every year to recognize the outstanding contributions of scientists in the field of astrophysics. This years prizes are:

Tycho Brahe Prize
The 2014 Tycho Brahe Prize is awarded to Prof. Antoine Labeyrie in recognition of his innovative concepts and inventions now widely used in modern optical imaging at high angular resolution.

Lodewijk Woltjer Lecture
The 2014 Lodewijk Woltjer Lecture is awarded to Prof. Rashid Sunyaev for his outstanding career in theoretical and high-energy astrophysics, cosmology, X-ray astronomy and space research.

MERAC Prizes
The 2014 MERAC Prizes for the Best Doctoral Thesis are awarded in
Theoretical Astrophysics: to Dr. Claudia Del P. Lagos for her thesis on the treatment of star formation and feedback in simulations of galaxy formation.

Observational Astrophysics: to Dr. Amaury Triaud for his thesis on the discovery and characterisation of many new exoplanetary systems.

New Technologies: to Dr. Boon Kok Tan for his thesis on detector technologies for sub-millimetre wave astronomy.

The awardees are invited to give a plenary lecture at the European Week of Astronomy and Space Science (EWASS) to be held in Geneva, Switzerland on 30 June – 4 July 2014.

The European Astronomical Society (EAS) promotes and advances astronomy in Europe. As an independent body, the EAS is able to act on matters that need to be handled at a European level on behalf of the European astronomical community.

For further information, please contact the EAS President: Prof. Thierry Courvoisier, Tel: +41 22 379 21 01, thierry.courvoisier@unige.ch and visit the EAS website: **http://eas.unige.ch/**

Tycho Brahe Prize

The 2014 Tycho Brahe Prize is awarded to Prof. Antoine Labeyrie in recognition of his innovative concepts and inventions now widely used in modern optical imaging at high angular resolution.

The Tycho Brahe Prize is awarded in recognition of the development or exploitation of European instruments or major discoveries based largely on such instruments.

Klaus Tschira Stiftung gemeinnützige GmbH | KTS

The Tycho Brahe Prize is funded by the Klaus Tschira Stiftung, a German foundation, which was established by the physicist Klaus Tschira in 1995 as a non-profit organisation. Its primary objective is to support projects in natural sciences, mathematics, and computer sciences, raising public awareness and appreciation for these fields.

The European Astronomical Society awards its 2014 Tycho Brahe Prize to Professor Antoine Labeyrie in recognition of his outstanding contributions to modern optical imaging at high angular resolution. Having invented holographic gratings, he proposed the technique of speckle interferometry, which allowed toreach the diffraction limit of even the largest telescopes. Next, he was first to obtain interference fringes between two separate telescopes after the early single-telescope demonstration by A. Michelson et al. nearly a century ago. He continues to produce an amazing variety of innovative concepts for optical interferometry with large diffracting pupils.

Labeyrie's deep understanding of optics and physics fuelled his interest in the challenges of astronomical observing, particularly in ways to improve angular resolution. He proposed the method of 'speckle interferometry' and in 1970 applied it with collaborators to improve the angular resolution of the Palomar 5-m telescope by a factor of 50, leading to many discoveries on single and multiple stars.

He then undertook to build multi-telescope interferometers to push angular resolution beyond that achieved in the 1920's by A.A. Michelson and F.G. Pease with their 20 and 50 feet interferometers. In 1974 he proved that light could be combined from separate telescopes, even large ones, with the 'Interféromètre à deux Telescopes' (I2T), confirming the few early results by Michelson and adding some 20 new measurements of stellar angular sizes. This pioneering work led him to promote the idea of connecting existing or planned telescopes, such as the VLT in Paranal, and the Keck Interferometer in Hawaii.

As he worked to develop the theory of image formation with multi-aperture instruments, the concept of 'hypertelescope imaging' occurred to him, and he conceived practical ways to implement the principle, which leads to optical arrays of many small apertures which perform much better, in theory, than fewer large ones, at given collecting area.

During the development of adaptive optics for large telescopes in the early 80s, Labeyrie proposed the use of an artificial star, created with a laser beam, and described the necessary theory. Laser Guide Stars are now a cornerstone of the adaptive optics systems of the E-ELT. Because of atmospheric limitations in the optical domain, Labeyrie has always advocated the case for space interferometry missions.

Antoine Labeyrie is of French nationality. He did his studies at the University of Paris and at the Institut d'Optique Théorique et Appliquée, where he obtained his Master's. He received his PhD from the University of Orsay in 1968, before starting his career as an optical engineer at the CNRS in 1971. He was appointed Professor at the Collège de France in 1991 and became a member of the Académie des Sciences in 1994. Throughout his career, Labeyrie has proved that he is an astronomer of singularly innovative genius, the source of the most important breakthroughs in the field of high angular resolution astronomy. Reaching the diffraction limit in optical light, then breaking through even this frontier by the practical application of interferometry was revolutionary, although it appears commonplace now.

Lodewijk Woltjer Lecture

The 2014 Lodewijk Woltjer Lecture is awarded to Prof. Rashid Sunyaev for his outstanding career in theoretical and high-energy astrophysics, cosmology, X-ray astronomy and space research.

The Lodewijk Woltjer Lecture honours astronomers of outstanding scientific distinction.

R. A. Sunyaev's interests in science cover a wide range of astrophysical issues, from the physics of elementary processes to physical cosmology. Among his results, which have become an essential part of today's astrophysics, are the 'standard' theory of disk accretion onto black holes and neutron stars (Shakura and Sunyaev 1973, 1976); the Sunyaev–Titarchuk formula (1980) for the radiation spectra generated by comptonization of low-frequency photons in hot low-density plasma; the prediction of the influence of acoustic waves in the early Universe on the angular fluctuations of the cosmic microwave background (CMB) and the spatial distribution of galaxies (1970); and the Sunyaev– Zel'dovich effect (1972), which makes it possible to use clusters of galaxies as a powerful tool of observational cosmology. Astrophysics students around the world learn Sunyaev's name in connection with these results.

R. A. Sunyaev played the decisive role in the foundation of and progress in high-energy astrophysics and X-ray astronomy in the USSR and Russia. Having created in 1982 the Department of High Energy Astrophysics at the Space Research Institute (now IKI RAN) and having become its head, he led the selection and development of the science payload, selection of observation programs, and the data analysis and interpretation for three of the most successful astrophysical observatories ever launched in the USSR and Russia: the Roentgen Observatory aboard the KVANT module of the MIR Space Station and the Granat and INTEGRAL orbital observatories.

With his characteristic energy and enthusiasm, R. A. Sunyaev continues his intense work covering a wide range of scientific problems. Among them are the physics of hydrogen and helium recombination in the Universe, the spectral distortions in CMB radiation, turbulent motions and physical processes in the hot gas of clusters of galaxies, the theory of the boundary layer at the surface of an accreting neutron star, the theory of disc accretion onto supermassive black holes, star formation in distant galaxies, and physical processes in the vicinity of the supermassive black hole in the Milky Way – this is just an incomplete list of his current interests.

[Extract from the article 'Rashid Alievich Sunyaev (on his 70th birthday)' by Dmitrii A Varshalovich et al 2013 Phys.-Usp. 56 311.]

Rashid A. Sunyaev was born and finished secondary school in Tashkent, before graduating from the Moscow Institute of Physics and Technology in 1966. He then became the PhD student of Yakov Borisovich Zel'dovich, who knew how to inspire his young colleague. The two scientists collaborated tightly over 22-years at the interface of theory and experiment. Sunyaev was Full Professor at the Moscow Institute of Physics and Technology from 1975 to 2001. He was first the Head of the Laboratory of Theoretical Astrophysics at the Space Research Institute of Moscow (1974-1982) and then of the High Energy Astrophysics Department in the same institute (1982-2002). Since 1992 he is Chief Scientist at this institute of the Russian Academy of Sciences. He became director of the Max-Planck Institute for Astrophysics in 1996 and then Maureen and John Hendricks Visiting Professor at the Institute for Advanced Study of Princeton in 2010. During his extremely successful career, Sunyaev has received numerous honours and awards all around the world.

MERAC Prizes

FONDATION MERAC (Mobilising European Research in Astrophysics and Cosmology) is a non-profit foundation started in 2012 with headquarters in Switzerland to recognize and support young European astronomers.

There are yearly three MERAC Prizes awarded by the European Astronomical Society. The prizes of € 20'000 are for each of the three categories:

- Theoretical Astrophysics
- Observational Astrophysics
- New Technologies (Instrumental/Computational)

The prizes alternate by year for:

- Best Early Career Researcher Prizes (on odd years)
- Best Doctoral Thesis Prizes (on even years)

The awardees are also eligible for further support from the FONDATION MERAC.

The MERAC Prize Committee was impressed by the high quality of all the 24 nominated candidates for the three MERAC Prizes of 2014.

Best Doctoral Thesis in Theoretical Astrophysics

The 2014 MERAC Prize for the Best Doctoral Thesis in Theoretical Astrophysics is awarded to Dr. Claudia Del P. Lagos for her thesis in the field of galaxy formation. Dr. Lagos' thesis represents two major breakthroughs that overhaul the treatment of star formation and feedback in the simulations of galaxy formation. Her work has allowed the physical predictions of the galaxy formation models to be confronted directly with observations.

Claudia Lagos is a Chilean who gained an undergraduate degree in 2007, followed by a Master's in 2009, both at Universidad Católica de Chile. With three publications at the end of her master's, Lagos was awarded a prestigious studentship jointly funded by the Science and Technology Facilities Council and the Gemini Observatory to carry out a PhD at Durham University. Lagos completed her PhD at the Institute for Computational Cosmology in November 2012. She was awarded the Department of Physics Keith Nicholas Prize for Outstanding Academic Achievement and a Springer

Thesis Prize, awarded to the three best thesis in all physics each year. She recently took up a highly competitive fellowship at the European Southern Observatory in Germany. She continues to play a leading role in the development of state-of-the-art models of galaxy formation.

Claudia Lagos' PhD thesis focused on the galaxy formation model, GALFORM, which can implement essentially all existing theoretical models of star formation. Her work overhauls the two key processes at the centre of how galaxies are made: the formation of stars and the regulation of star formation following the injection of energy into the inter-stellar medium. These calculations represent the first real advances in these areas in over a decade. Lagos' work allows the physical predictions of the galaxy formation model, such as the content of the interstellar medium, to be confronted directly by observations from new major telescopes, such as the Atacama Large Millimetre Array (ALMA).

The PhD thesis of Claudia Lagos was carried out at the Institute for Computational Cosmology at Durham University (UK) between October 2009 and September 2012, under the supervision of Prof. Carlton Baugh and Dr. Cedric Lacey.

Best Doctoral Thesis in Observational Astrophysics

The 2014 MERAC Prize for the Best Doctoral Thesis in Observational Astrophysics is awarded to Dr. Amaury Triaud for his thesis in the field of exoplanets. During his doctorate, Dr. Triaud conducted the radial velocity confirmation of transiting exoplanet candidates produced by the WASP survey, confirming 48 new systems. By measuring the angle between the stellar rotation spin and the planet's orbital spin, he discovered that many hot Jupiters occupy non-coplanar orbits, a result that has a big impact on planet formation and orbital evolution models.

Amaury Triaud is currently doing a postdoctoral fellowship supported by the Swiss National Science Foundation, at the Massachusetts Institute of Technology, in the USA. His path is an example of contemporary youth in Europe: born and schooled in France, he then decided to pursue his undergraduate studies at the University of St Andrews in Scotland graduating in 2007 with a Masters of Physics. His summers were spent in France (2003 & 2004), Germany (2005) and Switzerland (2006) doing research internships that nurtured his scientific career and produced his first papers. He moved to Geneva in 2007 for a four-year PhD program that was completed in August 2011. The number, variety and citation rate of his publications are a testimony of his achievements during and since his thesis. He also applied his skills to the service of multiple outreach activities to bring science to the wide public.

Amaury Triaud conducted the radial velocity confirmation of transiting exoplanet candidates produced by the Wide Angle Search for Planets (WASP). This led to the confirmation of 48 new nearby exoplanetary systems, which are prime targets for characterisation. Triaud chose to focus on measuring the angle between the star's rotation axis and the planet's orbit. Multiple observations using ESO's HARPS spectrograph unveiled the earliest evidence for planets on retrograde orbits and found that a large fraction of hot Jupiters do not occupy orbits coplanar with their star. Those results shacked widely held believes about planet formation and migration scenarios and triggered a flurry of theoretical papers and additional observations.
The PhD thesis of Amaury Triaud was carried out at the Observatory of the University of Geneva (Switzerland) between August 2007 and August 2011, under the supervision of Prof. Didier Queloz.

Best Doctoral Thesis in New Technology

The 2014 MERAC Prize for the Best Doctoral Thesis in New Technology is awarded to Dr. Boon Kok Tan for his thesis in the field of sub-millimetre wave astronomy. Dr. Tan's research for the PhD has contributed significantly to the advancement of the state of the art of coherent detector technologies. This includes fully integrated SIS mixer chips with wide RF and IF bandwidth, which are suitable for future heterodyne arrays, and advanced designs such as balanced and single side-band mixers.

Boon Kok Tan was born in a small town (Taiping) in Malaysia. At the age of 17, he was selected to become already an undergraduate student at the University of Technology Malaysia, due to his exceptional school performance. After completing the Bachelor degree in Electrical and Electronic Engineering in 2001, he was offered a postgraduate position in Solar Engineering, and was awarded the Master degree in 2002. Following a lecturing career at Tunku Abdul Rahman University in Kuala Lumpur, he was offered a D. Phil position – funded by the prestigious King of Malaysia awards – at Oxford Astrophysics to work on the development of quantum limited coherent detectors for submillimetre astronomy. B. K. Tan obtained the D. Phil degree at Oxford in 2012. He is currently a member the Millimetre Detectors group of Oxford Astrophysics, leading the development of coherent THz detectors for the Atacama Large Millimetre Array (ALMA).

Boon Kok Tan's thesis describes the development of receiver technologies for sub- millimetre astronomy instruments, focusing on high performance coherent cryogenic detectors operating close to the superconductor gap frequency. The mixer receiver developed in his thesis work contributed novel ideas in all three major parts of Superconductor-Insulator-Superconductor (SIS) mixers. These novel detector systems pave the way into high performance THz mixers, which will have a strong impact on sub- millimetre wave astronomy.

The PhD thesis of Boon Kok Tan was carried out at the Department of Physics and Astrophysics of the University of Oxford between October 2007 and June 2012, under the supervision of Dr. Ghassan Yassin.