European Astronomical Society

European Astronomical Society e-Newsletter 4

EAS News

Message from the President

Roger Davies, the new EAS President

It is an honour and a privilege to be taking over as President of the EAS. I follow Thierry Courvoisier who was been President of the Society for seven years and my first act is to recognise the huge contribution Thierry has made to the Society. He presided over the creation of EWASS (transformed from the earlier JENAM) which has become the annual focal point of the Society's activity. Under Thierry the Society grew in both membership and influence, and it is thanks to his leadership that I am taking over a Society in strong health.

Read more

My presidency started at the Prague EWASS which was a wonderful festival of astronomy capably organised by the SOC and LOC who did a terrific job. The meeting was a fitting celebration of the 100th anniversary of the Czech Astronomical Society. I would like to thank the organisers and all the speakers for making EWASS 2017 a stimulating and memorable event. You will find many of the Symposia held during the meeting summarised later in this e-Newsletter. I look forward to seeing you all again in Liverpool 3-6th April 2018 for the next EWASS.

The timing of the EWASS in 2018 has been brought forward from summer to the week immediately following Easter. This was done at the request of the IAU to move the meeting away from the dates of their General Assembly. The Council decided to use this opportunity to revise the timing of the meeting with the Presidents of the Affiliated Societies. From 2018 onwards this will move from the January Council meeting to be held at EWASS. This change removes the need for extra travel by Society representatives and we very much hope that it will increase participation of Affiliated Societies in the business of EAS. The other consequence of an earlier date for EWASS is that we will not have some of the formal financial reports, that need to be approved at the Society's Annual General Meeting (AGM), available. As a result we will hold the AGM during the IAU General Assembly in Vienna. As soon as we have details of the time and place we will let you know.

Your Council has been busy promoting and extending the influence of "astronomy made in Europe". We have appointed Professor Michael Bode to the part-time role of the Society's Special Representative to the European Union. The aim is to keep astronomy's interests in the forefront of the minds of decision makers in Brussels and Strasbourg. This arrangement, which runs through 2018, has been funded by the Society with valuable contributions from several Affiliated Societies. We will review how it is working in mid-2018 and if we wish to continue or expand the arrangement we will be seeking further contributions to the cost.

On the first of September you will have received the report, commissioned by the Council, of the Working Group on Ethics. Later in this e-Newsletter you can find an article on this report. You have an opportunity to comment on it using the dedicated email address eas.ethics.wg@

gmail.com, before the 31st of October. I am very grateful to the Working Group and in particular to the Chair, Dr. Sara Lucatello, for producing such a carefully considered report on this increasingly important topic.

Finally you will see later in this e-Newsletter an invitation to nominate candidates to be members of EAS Council. We have a new procedure for these elections which is designed to give members a more direct voice. I very much encourage you to participate in this process and invite you to contact me or the Secretary Prof. Serena Viti if you have any questions.

Roger Davies, EAS President

EAS News

Draft report by EAS Working Group on Ethics
EAS membership invited to send comments and suggestions

Recognising the importance of a wide range of ethical, behavioural and professional issues affecting astronomy, the Council of the EAS has formed a Working Group on Ethics. This Working Group has produced a report which Council has discussed and now wishes to put forward for consultation by the EAS membership. Read more

Members of the EAS Working Group on Ethics are Sara Lucatello (chair, INAF, Italy), Joao Alves (Univ Vienna, Austria), Bililign Dullo (UCM, Spain), Jo Jarvis (Open University, UK), Claudia Lagos (UWA, Australia), Johan Knapen (IAC, Spain), Francesca Primas (ESO), Rodolfo Smiljanic (CAMK, Poland), Darach Watson (DARK center, Denmark).

The draft of the report is available as a PDF document on the EAS website. It consists of two parts. Part I is an "Ethics Statement", which aim to describe the minimal ethical standards expected by the EAS in the broad areas of conduct towards others, how to conduct research, publication and authorship, peer review, and how to deal with conflicts of interest. The planning is that, after the consultation stage, this statement is formally adopted by Council in its January 2018 meeting as an EAS policy document. Part II contains guidelines for good practice, on topics as varied as conduct towards others, organisation of and conduct at conferences and meetings, fair recruiting and employment, widening access to our profession, and ethics in publishing.

Council now invites the EAS membership to read the report and send any comments and suggestions to the Working Group, through the dedicated email address eas.ethics.wg@gmail.com by **31 October 2017**. Comments can be submitted by individuals, groups, or collectives such as national societies. The Working Group will consider all comments and use them to produce the final version of the report, to be adopted by Council in January.

Council regards the matter of Ethics as very important, and hopes that the EAS members will take note of the ethical standards as outlined in the document and the guidelines for good practice given, and that they will assist the Working Group in finalising the report.

EAS News

An invitation to nominate candidate Councillors
The first election of Councillors according to the new procedure

In July 2018 three members of EAS Council will have served their first full term. At the last General Assembly a new procedure for electing Councillors was approved. The amended by-laws and constitution can be found here. In accordance to the new procedure, ordinary members are invited to nominate candidates, provided such candidates have indicated in writing that they are willing to serve if elected. Nominations need to arrive, by email (eas@unige.ch), to Council no later than 30 November 2017.

EAS News

Call for nominations for the Tycho Brahe Prize 2018
Deadline: 31 October 2017

The EAS Council now invites EAS members to nominate suitable candidates for The Tycho Brahe Prize 2018. The prize is awarded annually in recognition of the development or exploitation of European instruments, or major discoveries based largely on such instruments. ▾ Read more

The prize carries a monetary reward of 6000 €. Short biographies of previous years' awardees and full details regarding the prize are to be found on the EAS website. There are no restrictions to the nationality of the candidates nor to the country of origin or residence. Nominations are only accepted through a web form accessible for EAS members. The deadline for 2018 nominations is Tuesday, 31 October 2017.

Tycho Brahe Prize Nomination

EAS News

Possibility of co-payment of EAS membership fee no longer offered
Important information for RAS and SEA members

It has been possible for certain EAS members to pay their membership fees together with the fees of their national societies. For 2017, this has only been possible for the Spanish SEA and the UK RAS, but the EAS has now agreed with both these societies to stop offering the possibility for 2018. ▾ Read more

The reason is that this method of co-payment, which in the past saved work and costs, has become redundant now EAS membership fees can be paid using online payment, and now in fact causes considerable extra work both the SEA and RAS, and for the EAS office. EAS members who used this facility are asked to pay their EAS fees directly to the EAS.

We also remind members that an option exists to pay the membership fee as part of the EWASS registration fee.

Johan Knapen, EAS Treasurer

EAS News

EWASS registration fees
How to balance financial risk, income and expenditure

The yearly European Week of Astronomy and Space Science (EWASS) is going from strength to strength, and is developing into the main regular meeting in our field in Europe. The organisation of EWASS is driven by a need for further homogenisation and professionalisation of the meetings, while at the same making them more attractive for a broad audience. But organising such large meetings professionally comes at a cost. ▾ Read more

Turning EWASS into the main astronomy meeting in Europe is one of the aims of the EAS Council, who recognised that we in Europe did not have a regular general meeting, equivalent to, e.g., the meeting series of the American Astronomical Society (AAS), and that we should aim to develop one. Council aims at organising a professional EWASS meeting that is attractive for all astronomers in Europe and beyond, including younger astronomers and PhD students, and

those working in fields which traditionally may have felt a bit outside the remit of EWASS (such as Solar physics or astroparticle physics).

The 2015 and 2017 EWASS conferences attracted close to 1200 participants, including many students and young postdocs, from all fields (the 2016 meeting had around 900 participants). For EWASS 2018, in Liverpool in April, we expect even more. The EAS has recognised the need to collaborate with professional conference organisers, because the effort of organising such large meetings goes well beyond what can be expected from astronomers and their departments or institutes who also have other jobs to attend to, and because the EAS has no staff of its own that can offer significant help. The EAS has selected Kuoni for a multi-year EWASS contract, starting with the 2014 Geneva meeting. Kuoni is a huge international firm with a powerful event organisation branch, and is present in most European countries. In practice, Kuoni has a small core team handling most of the organisation, with local experts helping out with the logistics.

But organising such large meetings professionally comes at a cost, and after receiving various comments on the registration fees, both on the perceived high level of them and on the fact that the fees cannot be waived for invited speakers or organisers of symposia or special sessions, I decided to write a few words about how meetings can quickly become expensive. I am not alone in this: Kevin Marvel of the AAS, for instance, has written about the same topic in the 2013 AAS newsletter (see also an earlier article by him in that post).

The main premise is that we want to keep the fees as low as possible, and even lower for students. Second is that we want to provide as good and professional a meeting as possible, with much included in the registration fee. The average fees for EWASS have now been essentially constant for a number of years, at a level of around 300 euros for EAS members who register early, lower for students, and higher for late registrants or non-members of the Society. This fee includes all coffee breaks and lunches, and an important part of the cost of the conference dinner and the welcome reception. Catering expenses in fact account for over a third of the fees, as one is often bound to prices of certain suppliers. A further third goes on the venue, mainly rental of the rooms and of the audiovisual equipment needed for the meeting. As EWASS grows we need to move to professional venues, where costs are higher. A final third is spent on organisational costs (both Kuoni and EAS), and on a large number of seen and unseen cost posts, ranging from poster boards to the conference bags and the cost of, e.g., first aid, security, and cleaning personnel. In terms of income, some 80-90% is from registration fees, with the remainder coming from sponsoring and exhibitors.

Why does registration become more expensive after a certain date? This has everything to do with planning. It is very hard to forecast the number of attendees, yet the EAS has to make substantial financial commitments many months in advance of the meeting, and set the registration fee and the charges for the social events before any income has come in. Adjusting numbers, either up or down, becomes increasingly costly as one gets nearer the meeting. So cheaper early registration fees are a direct incentive for people to register early, which will also provide cash for early expenses. In the case of the Liverpool 2018 EWASS, for instance, substantial and non-refundable payments for venue rental have had to be made well before registration opened.

As EWASS grows and becomes too big to fit into most University buildings, we will increasingly need to move to professional conference venues. Even though the costs of these can also often be subsidised locally, this will drive the organisational costs up. It is almost inevitable that EWASS registration fees will have to rise in the coming years, and when comparing with the high fees charged nowadays for much smaller conferences and even workshops, in particular in the northwest of Europe, this would certainly appear to be feasible. In addition, our professional conference colleagues keep reminding us that EWASS is by far the cheapest meeting they know of, compared to meetings in many other academic and non-academic fields. But as a Society catering for all of Europe, including the eastern parts where salary and travel support levels are considerably lower than the in the northwest, we must ensure that EWASS remains accessible to all.

Johan Knapen, EAS Treasurer

EWASS 2017 in Prague

An impression from the chairs of the hosting and scientific committees

The European Week of Astronomy and Space Science (EWASS) is the annual conference of the European Astronomical Society (EAS). With more than 20 years of tradition, it has imposed itself as the largest meeting of European astronomy. Prague already hosted JENAM 1998 and JENAM 2006, the latter as part of the XXVIth IAU General Assembly. ▾ Read more

The EWASS 2017 was held in Prague under the auspices of Deputy Prime Minister for the Science, Research and Innovation of the Government of the Czech Republic Pavel Bělobrádek, Minister of Education, Youth and Sports Stanislav Štech, President of the Czech Academy of Sciences Eva Zažímalová, and Mayor of Prague Adriana Krnáčová on 26-30 June 2017 at the Faculty of Law of the Charles University. The EWASS 2017 was organized by the European Astronomical Society (EAS), in collaboration with the Astronomical Institute of the Czech Academy of Sciences (AI CAS) and the Czech Astronomical Society (CzAS).

Jan Palouš and Cyril Ron, the happy main organizers at the end of the EWASS 2017 conference. *(Credit: EAS)*

Prague welcomed 1160 astronomers from 52 countries who came to discuss and evaluate the most recent discoveries and observations, to attack fundamental scientific, technical and administrative problems, and to agree on future international cooperation. The topics covered all astronomical disciplines, ranging from our closest neighborhood to the farthest objects of the universe. The EWASS 2017 was attended by 225 students (under and post graduated) and by other 40 volunteers, students and post-docs who helped with the organization on site.

During the EWASS 2017, there were 16 two-day symposia and 21 one-day special sessions held in 11 parallel sessions with 723 oral presentations, and 423 posters. In addition, there were 12 plenary lectures and other events, such as the opening and closing ceremony, an equity and diversity luncheon, as well as the workshop "Writing proposals for positions and telescope time", the latter two organized during midday breaks. An exhibition was set up at the venue of the EWASS 2017 in which 11 companies and institutions participated.

The following traditional EAS prizes were awarded: Tycho Brahe Prize to Bernard Delayer, Lodewijk Woltjer Lecture to Bengt Gustafsson, MERAC Prize in Theoretical Astrophysics to Selma de Mink, MERAC Prize in Observational Astrophysics to Kevin Schawinski, and MERAC Prize in New Technologies to Emmanuel Hugot.

The "Universe - yours to discover" outdoor exhibition in front of the Rudolfinum. *(Credit: EAS)*

As part of the accompanying programme, two presentations were also made for the general public at the building of the Czech Academy of Sciences (CAS), and two public exhibitions were organised: "AD INFINITUM: Look into the Depths of the Universe" at the Gallery of Science and Arts of the CAS, and the "Universe - yours to discover" outdoor exhibition in front of the Rudolfinum.

A rich accompanying program was prepared for the participants and accompanying persons. In

the evenings since Monday to Thursday there were the welcome reception, the EWASS President's dinner, students event, and the concert of classic music with the gala dinner. The participants could also choose excursions to the town Prague and to other places in the Czech Republic. The greatest interest was about the "Astronomical tour of Prague", where Czech astronomers guided interested persons.

EWASS 2017 in Prague was a great success !

Cyril Ron, chair of the Hosting Committee
Jan Palouš, chair of the Scientific Committee

EAS News

EWASS 2018 in Liverpool

Deadlines for abstract submission and early bird registration

The European Week of Astronomy and Space Science 2018, the joint annual meeting of the European Astronomical Society and the National Astronomy Meeting of the Royal Astronomical Society, will take place from **3 to 6 April 2018**, i.e. in the week following Easter Monday. The venue is the Arena & Convention Center (ACC) in Liverpool. The ACC is a professional conference center that provides excellent facilities to host the EWASS meeting expecting over a 1000 participants.

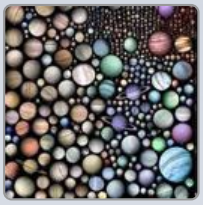
▾ Read more

The SOC, chaired by Chris Collins and Gabriella de Lucia, received over 100 proposals to organise symposia and special sessions. The SOC selected 11 symposia and 31 special sessions; the topics cover a wide range in astronomy. The PIs of the selected symposia and special sessions are currently defining the respective scientific programs. The abstract submission deadline is 27 November 2017. The very early bird registration deadline is 22 December 2017. We wish the EWASS Hosting Committee chaired by Matt Darnley success in organising the logistics and social program of the meeting and look forward to welcoming you in Liverpool.

Contributed News

Exoplanet science in the coming decade: the bright and nearby future

EWASS 2017 symposium 1



The prospects for exoplanet science in the immediate future are excellent. In view of this timeliness, EWASS symposium 4 intended to summarize the latest developments in exoplanetary science, with an emphasis on exoplanet projects expected for the next decade. The symposium was held on two days, 26 and 27 June 2017.

▾ Read more

2018 will be a key year with the launches of several space missions dedicated to exoplanets: NASA will launch the TESS mission which performs an all-sky transit; the Swiss-led ESA mission CHEOPS will become the first mission dedicated to characterize already known exoplanets. The launch of the James Webb Space Telescope (JWST) is also planned for that year. And on the ground, ESPRESSO at the VLT is expected to become operational, providing radial velocities with unprecedented precision. Therefore, we are the beginning of a decade during which many breakthroughs in exoplanet science can be expected.

Further milestones in the coming decade will be the commissioning of the E-ELT, planned for 2024, and the 2026 launch of the ESA's PLATO space mission, designed to find thousands of small exoplanets as well as Earth-like planets around solar analogue stars. Therefore, now is the time for the community to organise itself and prepare for the upcoming missions.

EWASS symposium 1 was divided into sessions describing recent exoplanet detections and

methods. The work presented reported on new exoplanet discoveries, the detection and characterisation of exo-atmospheres, the theoretical modeling of exo-atmospheres, and upcoming projects with an emphasis on JWST and PLATO. There were 6 invited speakers, 24 contributed talks and 5 posters. Most of the talks have been made publicly available on the symposium's website. We would like to thank once again all the speakers and poster presenters for their contributions.

The attendance to the symposium was quite large, with the room (about 80 seats) frequently exceeding its capacity. We expect that the symposium provided a balanced overview of the coming decade of exoplanetary research and an inspiration for new projects and collaborations.

Sz. Csizmadia, DLR Berlin, DE
A. García Munoz, TU Berlin, DE
H. J. Deeg, IAC Tenerife, ES
E. Guenther, TLS, DE
P. Kabath, AsU CAS, CZ

EWASS symposium 1 website

Contributed News

1st Gaia data, new science, new opportunities, synergies with radio astrometry - the GREAT network
EWASS 2017 symposium 2

The GREAT (Gaia Research for European Astronomy Training) initiative is a pan-European research network involving over 500 researchers in 20+ countries with a common interest in aiming to maximise the science potential of Gaia. This 10th GREAT network annual plenary meeting was co-located at the EWASS 2017 in Prague, constituted as Science Symposium 2. It was organised in six sessions, with 34 presentations, over the days 26-27 June 2017. ▾ Read more

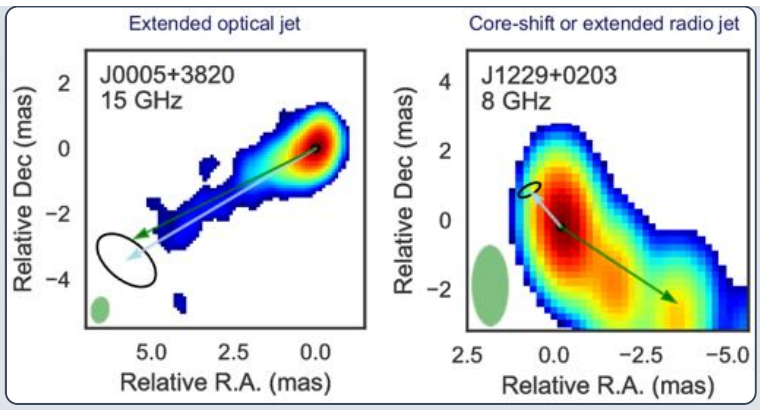
Following the successful open model adopted at the 5th GREAT Plenary in 2012, the community were invited to submit their proposed talk titles and abstracts on the meeting wiki. The final meeting programme was then generated by the SOC based on those contributions. The symposium was attended by over 100 people. All sessions were well attended, with lively discussion after each presentation. Full details of the programme and the presentations for S2 are available here.

Three sessions (1, 3, and 4) were dedicated to the presentation of science results obtained by the community on the basis of Gaia DR1 data. Rossi presented the discovery of 5 candidate hyper-velocity stars in the Gaia data which were found with the aid of a machine learning algorithm. This result was the basis of a press release during the EWASS 2017 meeting. Wegg presented a theoretical explanation for the Hercules moving group, a feature in the kinematics of local stars already discovered with Hipparcos data and now even more clearly visible in Gaia DR1, in terms of stars orbiting the Lagrange points associated with the bar of the Milky Way galaxy. Alves presented his research into the recently discovered 'blue streams'; of young stars in the solar neighbourhood, while Lallement presented the closely related topic of mapping the local ISM with the aid of Gaia data. Dern presented the progress toward a careful re-calibration of the red clump star luminosities and Lennon closed the first session showing results on runaway super-giant stars in the Magellanic clouds.

The second Gaia DR1 science session contained presentations on kinematic structure in the Milky Way (Evans) and on velocity asymmetries seen in the Galactic disk with Gaia DR1 data (Antoja). Schoenrich showed how the stellar

AGNs: radio-optical offset (light blue arrow) and jet direction (green arrow) from Kovalev's talk

kinematics can be used to make an assessment of the consistency of the Gaia data itself, while the results on the tests of the Gaia parallaxes with local Cepheids and RR Lyrae were presented by Muraveva. Iorio showed how a clever exploitation of the photometric data in Gaia DR1 allows the isolation of an all-sky sample of candidate RR Lyrae stars which can be used to map the properties of the inner halo. Simion demonstrated the power of combining Gaia and the APOGEE and LAMOST surveys through a study of disk red clump stars.



The third session on Gaia DR1 science contained a variety of presentations: on binary stars (Boffin), the transient sky (Hodgkin), nuclear transients (Kostrzewa-Rutkowska), testing Milky Way thin disk models with Gaia (Sysoliatina), a novel method of measuring the Sun's motion through the analysis of stellar streams (Malhan), and applying the M2M modelling method to Gaia data (Hunt).

Session 2 was devoted to Gaia and the second data release scheduled for April 2018. Prusti summarized the Gaia mission status and Brown provided and overview of the data processing for DR2, as well as some some preliminary performance statistics and he announced the time line for Gaia DR3 (mid-to-end 2020) and Gaia DR4 (end 2022). These presentations were complemented by more detailed presentations on the photometric and radial velocity data processing for Gaia DR2 by De Angeli and Blomme, respectively. Walton closed this session with and update on the activities within the GREAT network.

Session 5 was dedicated to synergies between Gaia and other surveys. Veljanoski presented an overview of the large spectroscopic surveys that are ongoing or planned to complement the Gaia data. Anders and Vickers showed in detail the synergies between Gaia and APOGEE and Gaia and LAMOST. Hill presented the plans for Milky Way spectroscopic surveys with the WEAVE instrument. Honma closed session 5 and opened the "Synergies with Radio Astrometry" session with an introduction of radio astrometry and radio very long baseline interferometry (VLBI).

In session 6, the "Synergies with Radio Astrometry" continued with a variety of radio astrometry science topics and how these can be combined with optical astrometry. Charlot presented the preparation of ICRF3, expected next year, emphasizing the vast improvement due to a larger amount and more precise data and a better assessment of source structure. Gattano discussed the improvement of the target selection for ICRF3 by his source stability algorithm based on the Allen variance of the source's time series. The comparison of radio VLBI and Gaia DR1 positions of AGNs was presented by Kovalev, finding an radio-optical offset favouring a parsec-scale jet-direction and thus physical in nature. Plavin showed his results of AGN core-shifts between 2 and 8 GHz. Ortiz Leon discussed VLBI astrometry of low-mass star-forming regions (SFR) - from measuring the orbits of short period binaries to revealing the 3D structures of the SFR. Finally, Dzib presented his proper motion study of Orion stars, finding no evidence of the previously claimed large scale radial expansion or rotation.

Artist's impression of two stars speeding from the centre of our Galaxy, the Milky Way, to its outskirts. These hypervelocity stars move at several hundred of km/s, much faster than the galactic average. Their high speeds are the result of a past interaction with the supermassive black hole that sits at the centre of the Milky Way and, with a mass of four million Suns, governs the orbits of stars in its vicinity. *(Credit: ESA, CC BY-SA 3.0 IGO)*

In addition to the main speaker programme, 21 posters were presented. The next GREAT plenary will be a symposium at the 2018 EWASS in Liverpool, United Kingdom.

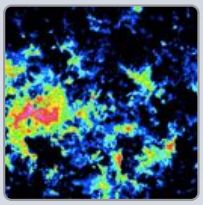
Anthony Brown, Leiden Observatory, Leiden, NL
Kazi Rigl, Istituto di Radioastronomia, Bologna, IT
Nicholas Walton, Institute of Astronomy, University of Cambridge, UK
Timo Prusti, ESTEC, ESA, Noordwijk, NL

EWASS symposium 2 website

Contributed News

Comparing simulations and observations of the varying scales of star formation

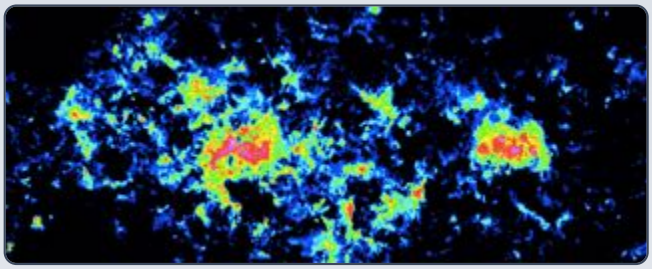
EWASS 2017 symposium 3



The formation of stars is of fundamental importance in virtually every field of astrophysics, from the birth of planetary systems to the life-cycle of matter within galaxies. Stars are born in the densest regions of molecular clouds, but this process is inefficient. The physical mechanisms responsible for determining the star formation efficiency remain the subject of debate. Possible causes, such as turbulence, magnetic fields and stellar feedback, can operate over a vast range of physical scales, rendering it highly challenging to determine the relative importance of each process.

▾ Read more

Until recently, studies of star formation in the Milky Way have mainly focused on individual star-forming regions, but there is growing evidence that star formation is intrinsically a multi-scale process and that the large-scale environment within the Galaxy can influence the behaviour of star-forming regions on small scales. A concerted effort to study the connection between small-scale processes and large-scale environment, both in the Milky Way and in other nearby galaxies, is essential to understand what regulates star formation in galaxies.



The W43 star-forming region, as seen by the CHIMPS 13CO 3-2 survey (Rigby et al. 2016), one of the more prominent molecular clouds in the Northern Galactic Plane.

Thanks to development of cutting-edge facilities, such as Herschel, Spitzer, SOFIA, ALMA, and others, the Milky Way plane has been surveyed in a multitude of tracers of the interstellar medium with a sensitivity and resolution sufficient to detect and characterise individual molecular clouds and the dense structures within them that are the direct precursors of young stellar clusters. On the theoretical side, large three-dimensional numerical simulations are becoming ever more sophisticated and have begun to include more and more physical processes.

Our symposium was divided into two parts, the first reviewing the observations and simulations of star formation across varying scales, with the second confronting a new problem, how to compare the simulations with observations. This involves producing "synthetic" observations, thus enabling analysis in the same manner as the real data observed by telescope facilities.

The symposium spanned six sessions over two days, with 50-60 participants attending each session. The program consisted of 8 invited talks, 17 contributed talks, and 28 posters, discussing observations, simulations and synthetic observations of star formation across the Galactic plane, in the Galactic Centre, and out into extragalactic systems. The symposium presented lots of new ideas, and elicited some fascinating discussion and the work presented here will form a major part of the star formation research, on all scales, both observationally and theoretically over the next few years.

David Eden, Liverpool John Moores University, UK
Simon Glover, University of Heidelberg, DE

EWASS symposium 3 website

Contributed News

Astrophysical jets and outflows - synergies from compact objects to protostars

EWASS 2017 symposium 4

Astrophysical jets are produced by a wealth of objects, from stars being born, to stars collapsing and dying, to various flavours of dead stars. The collimated outflows in each scenario are launched due to the process of accretion, whether it be onto a young stellar object, from a magnetized hot flow around a black hole, or during a stellar collapse and the production of a gamma-ray burst. After the birth of jets, they accelerate, escape the gravitational field of their birthplace, before injecting energy into and drive chemistry in their surroundings. In planet forming proto-stellar disks the outflowing material might even affect planet migration. Thus there are a multitude of processes taking place at various stages and on different scales.

Read more

Many of the identified processes are important in jets from compact objects, proto-stellar sources and other astrophysical jets. The evidence that common physics exists across the power scale of relativistic and non-relativistic jets was the reason to bring together different jet communities, from accreting black holes (supermassive, stellar-mass and intermediate-mass), to neutron stars, white dwarfs, tidal disruption events, ultra-luminous X-ray sources, evolved stars, and young stellar objects.

EWASS symposium 4 was devoted to Astrophysical jets and outflows, focusing on synergies from compact objects to protostars. Instead of sub-sessions on each class of object, we opted for a more fundamental organization in sub-sessions on the different physics involved.

- Ubiquity and properties of jets/outflows from compact objects to protostars: possible synergies
- Jet formation/launching, inflow-outflow connection
- Composition, power, dynamics and chemistry
- Interactions with surrounding medium and feedback on the driving system
- Future outlook and facilities

The structure of the session allowed to bring experts from different fields of accretion to better understand jet physics under different conditions and encouraged new thinking in each field and collaborations between fields. The order of the sub-sessions told a story of jet birth; jet launching and acceleration, to propagation and internal shocks, and interaction, deceleration, deposit of energy and death.

We felt that the largest communication gap was between the proto-stellar and compact object communities at large, therefore the organization effort was focused to balance the contributions of these two fields. Each contributor was given the (sometime difficult) task to communicate the problem, strategy, approach and results to a related, but different community. This was the essential starting point for an exchange of new ideas, methods and collaborations between two fields that now are recognized to be complementary for our understanding of jets and outflow physics.

A multi-wavelength view on the spectacular jet in the HH111 system in the Orion B molecular cloud complex. *(Credit: NASA/CXC/CfA/R. Kraft, NASA/HST/U. Colorado. B. Reipurth)*

Possibly the single most important limitation of the session was some missing dedicated time for discussion formally scheduled in the program. This was due to three main factors that played against the allocation of time for anything other than contributions: 1) the limited number of slots; 2) the large number of excellent contributors submitted for a talk and who could give a significant contribution; 3) most importantly, for each subject, the need to accommodate presentations from two different communities, effectively doubling the time required to cover a single physical subject. The topic of evolved stars had very few representatives present, where there are significant overlaps as well. We hope that future meetings will include more participants from that community to further collaboration and synergy.

However, our goal was to begin a structured series of events: start to bring together the communities and start to formally communicate. We are now working towards follow-ups with online discussions and further meetings with similar or different formats, e.g. subject and discussion oriented. In this view, and according to the feedback of the attendants, the session was a great success that we hope will give a new dimension to the study of astrophysical jets.

Magnus V. Persson, Chalmers University of Technology, SE (SOC co-chair)
Dave Russel, NYU Abu Dhabi, UAE (SOC co-chair)
Simone Migliari, ESAC (SOC co-chair)
Odysseus Donates, University of Vienna, AT
Lars E. Kristensen, University Copenhagen, DK
Linda Podio, Arcetri Observatory, IT
Simone Antoniucci, Rome Observatory, IT

EWASS symposium 4 website

Contributed News

Properties and evolution of accreting compact objects in low and high mass X-ray binaries
EWASS 2017 symposium 10

EWASS symposium 10 on "Properties and evolution of accreting compact objects in low and high mass X-ray binaries" provided a unique opportunity to bring together specialists from very different fields, working both on high and low mass X-ray binaries. Although emissions across the entire electromagnetic spectrum from these systems are often produced by different physical processes, both type of binaries share a number of theoretical and observational challenges that benefit from the exchanges of information and expertize between different international scientific collaborations. Read more

The discussions that took part during the symposium favored the flourishing of new collaborations and boosted ideas to advance in different aspects concerning the formation and evolution of Galactic and extra-Galactic binaries. The EWASS provides the perfect environment for this kind of events, thanks to the numerous participation and the friendly atmosphere.

As tested in other occasions, the participants greatly appreciated the idea of mixing different communities and enjoyed the invited talks providing wide overviews in all relevant fields, facilitating the interaction between colleagues with different backgrounds. We are particularly grateful to the invited speakers who made an effort to provide interesting and exciting reviews, that led the ground to open discussions on the more detailed works described during the contributed talks.

The three PIs of the Symposium S10 are grateful to all participants, for having joined the event and their active participation during the discussions.

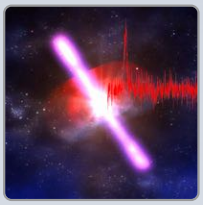
Enrico Bozzo, University of Geneva, CH
Andrea Sanna, Università di Cagliari, IT
Agnieszka Janiuk, Polish Academy of Sciences, PL

EWASS symposium 10 website

The poster for EWASS symposium S10

Contributed News

A multi-messenger look at the origin of gamma-ray bursts
EWASS 2017 symposium 11



We are currently living in the era of multi-messenger astronomy. We have gamma-ray and X-ray observations from active space missions such as Fermi, Swift, MAXI, INTEGRAL, Konus, AGILE, NuSTAR, CALET, Lomonosov and AstroSAT; and afterglow observations in radio (e.g. MeerKAT), optical and X-ray. Future facilities like CTA, Athena and SVOM are coming up. It is now more important than ever to connect our theoretical understanding of gamma-ray burst (GRB) physics to these multi-wavelength observations. Furthermore, after the discovery of astrophysical neutrinos by IceCube and that of gravitational wave signals by LIGO, the role that GRBs may play in these new fields of astrophysics is now being actively investigated.
▾ Read more

EWASS symposium 11 celebrated not only the 50th anniversary of discovering GRBs but the 20th anniversary of discovering afterglows. These explosions are amongst the most energetic events ever detected, but their origin is still a mystery today. There are several open questions regarding the origin of GRBs: What are the prospective progenitor systems? What powers the central engines? How does the circumstellar environment influence the afterglows? What are the connections between various supernova classes and GRBs? How strong is their dependence on the host galaxies' metallicities? And if it is still difficult to reach a conclusion on these questions, what are the directions we shall proceed in the future?

Our programme thus covered various topics such as progenitors and central engines, host galaxies and the GRB-supernova connection, afterglow studies, neutrinos and gravitational wave emissions associated with GRBs. Our aim was to bring together scientists working either on multi-messenger/wavelength observations or on theoretical modeling.

The symposium was well attended, with around 50 people attending at any single time. The presenters were from a broad range of European and international countries. Several of the talks were presented by young researchers highlighting the continued interest in this area.

A special emphasis was put on dialogue and mutual comprehension. We realized that the different fields of astrophysics tend to have not only different techniques and working methods,

but sometimes even heterogeneous terminology. Therefore, we encouraged our speakers to make their message clear by using terms and expressions carefully chosen to an audience of general astronomers. This approach also promoted equity and fair-play between junior and senior, as well as native and non-native English speakers. Additionally, we aimed for gender balance in this meeting. We therefore made sure that no gender group took up more than half of our invited speakers and chairs. Amongst the contributing speakers, about 30% were female, which is a fairly high ratio especially in this field of astrophysics.

Contributions not selected for an oral presentation had a chance to be presented as posters. We held two poster sessions during which every presenter could talk about their poster, displayed on the large screen, for 1 minute. This way early career scientist had a chance to to advertise their work in front of our whole audience.

Dorottya Szécsi, AsÚ AV ČR, Ondřejov, CZ (co-chair)
Chris Copperwheat, Liverpool JMU, UK (co-chair)
Susanna Vervain, CNRS, Paris Observatory, FR
Attila Mészáros, Charles University Prague, CZ
Marica Branchesi, INFN Firenze, IT
Zsolt Bagoly, Eötvös University Budapest, HU
Christina Thöne, IAA Granada, ES
Jakub Řípa, LeCosPA, Taipei, TW
Samantha Oates, Warwick, UK
Alexei Pozanenko, IKI Moscow, RU
Patricia Schady, MPE, DE

EWASS symposium 11 website

Contributed News

Astroinformatics: from big data to understanding the Universe at large
EWASS 2017 symposium 14

Astroinformatics is a full fledged new discipline emerging from the need of extracting new knowledge from complex all-sky surveys and responding to the ever-increasing astronomical data-deluge. It is a multi-disciplinary science combining the fields of astronomy, computer science and advanced mathematics and statistics. It combines machine learning, modern database technologies, and complex data models to reveal correlation, cluster unlabeled data, identify outliers etc. and in general extend our knowledge about the Universe in terms of classes of objects as well as individual objects. ▾ Read more

A standalone series of Astroinformatics meetings has been held annually world-wide starting at Caltech in 2010. The latest one was in Sorrento in 2016, and the next one will be in Cape Town in Nov 2017. The dedicated session at EWASS 2017, held in Prague, was the first opportunity to present Astroinformatics to the wider astronomical audience who were not already sold on the concept.

The SOC had a difficult task of fitting 16 invited lectures, 16 contributed talks and 22 poster presentations in six 90-minutes blocks. Each poster was allotted a one-minute flash talk for an improved reach. The presenters were asked by SOC to prepare their talks for wide audience, without making them too technical. This effort was well received and rewarded by the attendance peaking at over hundred during morning invited lectures.

The energetic contributions in each session covered a vast landscape of Astroinformatics and related disciplines. On day one, the first block of the symposium was dedicated to the methods of combination large data sets. It started with two lectures about Virtual observatory, its infrastructure and technology as well as its practical impact on scientific analysis of vast amount of complex multi-spectral data resources. The second block was focused on classical machine learning, namely supervised methods used to identify and classify various known types of celestial objects using their morphology, shape of light curves or color indices. The third block

was dedicated to modern deep learning and unsupervised methods with a particular focus on different flavors of artificial neural networks. The fourth block presented on the second day of the symposium was focused on challenges of Big Data problems (e.g. how to make spatial queries in a table with trillion rows of objects coordinates or to the exciting plans for LSST data processing). The fifth, more philosophically oriented block was concentrated on the process of knowledge discovery in big data sets and on the advanced statistical analysis. Finally, the last block of the S14 symposium introduced different projects in astroinformatics and various software tools.

Rafael de Souza explaining unsupervised learning techniques in a nutshell. *(Credit: Petr Škoda)*


The audience at EWASS symposium 14. *(Credit: Petr Škoda)*

The second day of the EWASS symposium was organized in collaboration with the COST Action TD1403 BIG-SKY-EARTH. The action is mandated to identify common problems in handling PetaByte-scaled databases both in contemporary astronomy and Earth observation disciplines like remote sensing, climatology or seismology as well as discover in them the new scientific insights. Several EWASS symposium 14 participants continued the fruitful discussion with their colleagues from non-astronomical disciplines during the COST meeting which started the next day after the EWASS. It was held at the Faculty of Information Technology of Czech Technical University in Prague with participation of more than forty scientists working on Big Data problems in Earth and Sky observations (including numerous students).

The presentations are available at this website and will be soon available on Zenodo repository as an electronic proceedings.

The great interest shown in the symposium by the astronomy community at large has highlighted the importance of Astroinformatics. Its application to all aspects of astronomy leading to enhanced understanding of the entire field is well appreciated.

Petr Škoda, Czech Academy of Sciences, Ondřejov, CZ (chair)
Emille Ishida, Blaise Pascal University, Clermont-Ferrand, FR
Rafael de Souza, University Sao Paulo, BR
Ashish Mahabal, Caltech Center for Data-Driven Discovery, Pasadena, USA

EWASS symposium 14 website

Contributed News

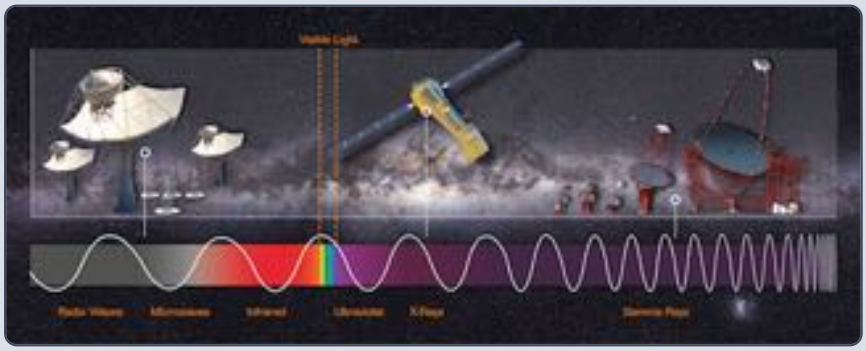
Scientific synergies enabled by SKA, CTA and Athena
EWASS 2017 symposium 15

EWASS symposium 15 was focused on the scientific synergies enabled by SKA, CTA and Athena, the unprecedented capabilities of which will deliver transformational science during the next several decades. The three observatories will cover distinct portions of the electromagnetic spectrum (the radio band for SKA, the X-ray band for Athena and the GeV-TeV band for CTA) and the talks in the symposium showed that the fully-fledged multi-messenger astronomy enabled by SKA, CTA and Athena will lead to address outstanding scientific questions, which are still largely unanswered.

▾ Read more

The symposium was organized in six sessions, each of which devoted to the potentialities enabled by one of the three facilities in combination with data provided by other major instruments operating across the electromagnetic spectrum, and in the realm of other messengers (e.g. gravitational wave and neutrino astronomy).

The title of the first session was "The hot and energetic Universe", and dealt with the synergies of Athena with world-class facilities operating in the optical, infrared and sub-mm bands. After introducing the Athena project and the perspectives for synergic activities with other ESO facilities (with particular emphasis on multi-object spectrographs), the talks focused on the intriguing results expected from combining Athena and SKA observations in order to study the accretion, ejection and feedback in the Active Galactic Nuclei (AGN).



The official image of EWASS symposium 15, illustrating the huge wavelength coverage of the combined SKA, CTA and Athena facilities.

The second session, entitled "New visions of the energetic and relativistic Cosmos", explored the synergies of SKA with the future X-ray and gamma-ray space missions. The unprecedented potentialities of the combined SKA and Athena data were reported at the beginning of this slot: in particular, highlights have been preliminarily identified in the studies of the Galaxy Clusters (with a talk devoted to that) of the large scale structure, of the black hole accretion and growth (from AGN to X-ray binaries), and of the transients. The specific case of thermonuclear runaway supernovae was also presented: the very large increase in sensitivity of the SKA with respect to its predecessors will lead us to be able to discriminate the scenarios for their progenitors (single-degenerate vs. double-degenerate), with profound consequences not only in stellar evolution theory but also in cosmology.

The third session looked at the "The extremes of the electromagnetic Universe", showing the wealth of scientific results which are expected from the combination of the data produced by the best facilities ever built at the two extremes of the electromagnetic spectrum: SKA and CTA. After the review about this subject proposed in the second block, during the third session three talks reported on the promising perspectives of the investigation of supernova remnants, molecular clouds and radio-loud AGN. The expected significant improvements in the study of ultra-high-energy particles were also described, as well as the possibility of unveiling the so-far hidden population of off-axis gamma-ray bursts (GRBs) and of bursts produced by the most massive population III stars.

The opening session of the second day of the symposium ("Breakthrough radio astronomy: exploring the unknown") concentrated on the extremely promising possibilities offered by complementing the SKA observations with data taken at other radio frequencies. First, the combination of SKA and ALMA was shown to be uniquely powerful for the study of many different types of astronomical phenomena, ranging from the Sun to the epoch of reionization. The unique synergies with the very long baseline interferometry (VLBI) facilities were then highlighted. The last three contributions of the session were devoted to the exciting perspectives of the investigation of the still mysterious Fast Radio Bursts (FRBs) and of the search for SETI signals.

The fifth block of talks touched the subject "Transformational pictures of the Universe", describing some of the science, which will stem from the synergies of SKA with optical and/or infrared facilities. The first talk reported on the unprecedented results, which will be produced by the study of the optical and infrared counterparts to the thousands of radio pulsars (and/or fast transients), which will be discovered by SKA. The promising results offered by the study of the population of the galaxies during the cosmic reionization era, and of the later galaxy evolution, were also described later in this slot of talks.

Finally, the last session enlarged the view beyond the electromagnetic spectrum, anticipating the

"Fully deployed multi-messenger astronomy" which will be warranted by the combination of data obtained by the detectors of gravitational waves, neutrinos and cosmic particle with those provided by SKA and the other facilities. The first talk zoomed in on the extraordinary progress, which is anticipated in compact object astrophysics and experimental tests of Einstein's theory as a result of the combination of SKA data with the observations of GW detectors. The synergies of SKA with two world-class cosmic ray and neutrino detectors (IceCube and Pierre Auger) were then discussed. Finally the focus moved to describe the perspectives for large developments in multi-wavelength machine learning algorithms, big data handling, and interoperability among the major astrophysical facilities.

In summary, the symposium clearly showed the powerful capabilities of the synergies provided by SKA, Athena, and CTA, and confirmed the pillar role of these facilities in fully exploiting the Universe as a laboratory of fundamental physics, and to eventually pave the way to a new vision of the Cosmos.

Xavier Barcons, IFCA (CSIC-UC) Santander, ES
Robert Braun, SKA/Jodrell Bank, UK
Emma de Oña Wilhelmi, IEEC-CSIC Barcelona, ES
Evan Keane, SKA/Jodrell Bank, UK
Andrea Possenti, INAF/OAC Cagliari, IT

EWASS symposium 15 website

Contributed News

New board appointed and prizes awarded by the ESPD
News from the European Solar Physics Division

The European Solar Physics Division (ESPD) is a division of the European Physical Society that represents and provides a forum for scientists interested in the physics of the Sun. The ESPD is affiliated with EAS through the Joint Solar Physics Group. The ESPD has recently had its business meeting where a new board was elected and prizes were awarded. ▾ Read more

The following ESPD prizes have been awarded for the first time.

- The Senior Prize is awarded to Prof. Dr. Manfred Schüssler for his outstanding, life-long scholarship in solar physics, his fundamental contribution to the study of solar magnetic fields and his school-forming influence on generations of solar physicists.
- The Early Career Prize went to Dr. Natasha Jeffrey for her significant contributions to the physics of solar flares and for inspiring outreach activities.
- The PhD Thesis Prize is awarded to Dr. Clara Froment for significant contributions to the solar coronal heating problem in the course her PhD Thesis.
- The Student Poster Prize is awarded to Mr. David Korda for his work entitled "Combined Helioseismic Inversion for 3D Vector Flows and Sound-Speed Perturbations".

Furthermore, a new board for the ESPD has been appointed for the period of 2017-2020. Elected members are

- Eduard Kontar (UK): President
- Istvan Ballai (UK): Treasurer
- Shaun Bloomfield (UK): Chair, Conference/Workshop/School Committee
- Ilaria Ermolli (IT): Chair, Public outreach Committee
- Elena Khomenko (SP)
- Emilia Kilpua (FI)
- Jasmina Magdalenic (BE)
- Ramón Oliver (SP)
- Étienne Pariat (FR): Vice-president; Chair, Prize Committee
- Tiago Pereira (NO): Secretary

- Georgia Tsiropoula (GR): Chair, Conference/Workshop Committee
- Francesca Zuccarello (IT)

Co-opted members are

- Manolis Georgoulis (co-opted: former President)
- Mats Carlsson (co-opted: EAST)
- Eduard Kontar (co-opted: CESRA)
- Stefaan Poedts (co-opted: SWWT)

About the EAS and the e-Newsletter

The European Astronomical Society (EAS) is a society of professional astronomers founded in 1990 and aiming at promoting and advancing astronomy in Europe.

Started in 2016, the e-Newsletter is a prime communication tool between the society and its members. It supersedes the short e-News and the paper Newsletter and is foreseen to be issued three to four times per year.

You prefer paper? Please, print the e-Newsletter from the PDF icon at the top-right.

If you would like to contribute, please contact Maarten Baes (Ghent University, Belgium), the EAS e-Newsletter editor.

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