



European Astronomical Society 2013 Prizes

Tycho Brahe Prize

The 2013 Tycho Brahe Prize is awarded to **Massimo Tarengi** in recognition of his central role in the development of the European Southern Observatory facilities that have resulted in Europe's world-leading role in ground-based astronomy.

Lodewijk Woltjer Lecture

The 2013 Lodewijk Woltjer Lecture is awarded to **Suzy Collin-Zahn** for her fundamental contributions to the understanding of Active Galactic Nuclei.

MERAC Prizes

The 2013 MERAC Prizes for the Best Early Career Researcher are awarded in

Theoretical Astrophysics

to **Gabriella De Lucia** for her work on the theoretical modeling of galaxy formation and evolution.

Observation Astrophysics

to **Elisabetta Caffau** for the discovery of a very primitive low-mass star in our Galaxy.

New Technologies

to **Justin Read** for his high-impact research in computational astrophysics and cosmology.

The awardees are invited to give a plenary lecture at the European Week of Astronomy and Space Science (EWASS) to be held in Turku, Finland on 8–13 July 2013.

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.

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Tycho Brahe Prize

The 2013 Tycho Brahe Prize is awarded to **Massimo Tarenghi** in recognition of his central role in the development of the European Southern Observatory facilities that have resulted in Europe's world-leading role in ground-based astronomy.

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

The Tycho Brahe Prize is funded by the [Klaus Tschira Stiftung](#), which was established by the physicist Klaus Tschira in 1995 as a non-profit organization. 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 2013 Tycho Brahe Prize to Professor Massimo Tarenghi in recognition of his outstanding contributions to the development of all of the major telescopes and facilities of the European Southern Observatory (ESO). His work has resulted in a paradigm-changing observational infrastructure in the optical-infrared and its associated operational methodology. Through 35 of ESO's 50 year history, M. Tarenghi has played a sequence of pivotal roles in its development to the current large and world-leading, multi-facility observatory.

After becoming an ESO Staff Member in 1979, Prof. Woltjer asked M. Tarenghi to be Project Scientist (later, Project Manager) of the MPIA 2.2m telescope that would be erected and operated by ESO on La Silla. The telescope and dome were completed in June 1983 in record time and for a very modest cost. The telescope is still in operation and, using the Wide-Field Imager, it is responsible for many of the survey programs and spectacular images that are so well known to astronomers throughout the world.

Then, M. Tarenghi became involved with the New Technology Telescope (NTT) project as Project Manager. He and his team implemented the use of active optics and the NTT became the way of the future with a spectacular performance right from first-light.

The use of relatively lightweight, actively-controlled optics on an altazimuth mount later became the baseline for the ESO VLT project with M. Tarenghi being appointed Project Manager in 1988. Bringing this huge and complex project to completion required strong and dedicated management. But more than just completing a novel and groundbreaking suite of telescopes, M. Tarenghi was instrumental in creating an entire new observatory on Cerro Paranal and, indeed, became its first Director.

During the development of the multinational ALMA project, M. Tarenghi held several senior positions including Interim Director, Interim Project Manager and in 2003 was appointed Director, a post that he held until 2008. By being appointed ESO Representative in Chile in December 2008, M. Tarenghi was again able to influence future events by preparing the ground in Chile for the forthcoming site selection decision for the E-ELT which was eventually made in 2010.



Massimo Tarengi is of Italian nationality. He did his studies at the University of Milan where he soon developed a passion for astronomy and for building ever larger and efficient telescopes. In parallel to his career at ESO, Tarengi has been Professor of Astrophysics at the University of Milano and is a member of the Accademia Nazionale dei Lincei. His astronomical interests include galaxy clusters, the large-scale distribution of galaxies in the universe, and active galactic nuclei. In 2006 he was appointed Commendatore della Repubblica Italiana for his scientific achievements. He spends now part of his time in Germany and part in Chile.



Lodewijk Woltjer Lecture

The 2013 Lodewijk Woltjer Lecture is awarded to **Suzy Collin-Zahn** for her fundamental contributions to the understanding of Active Galactic Nuclei.

The Lodewijk Woltjer Lecture honours astronomers of outstanding scientific distinction.

Active Galactic Nuclei (AGN) are among the most luminous objects in the Universe. They show a very rich phenomenology including variability on short time scales, emission that covers the electro-magnetic spectrum from radio waves to gamma rays and lines in emission; some AGN emit jets. Suzy Collin-Zahn has contributed to our understanding of these objects in many ways. She first understood that the lines are produced mainly by photoionisation from the continuum source and that they are expected to vary in time in response to the continuum variations. This relationship between continuum and line emission allows researchers now to measure the geometry of the nuclei and the mass of the central black hole.

Her interest for the emission components of AGN led Suzy Collin-Zahn to study the origin of the radiation and therefore the physics of accretion disks. She noted that the variability of the emission requires that the disks do not dissipate energy within their inner structure, but must rather be illuminated from the exterior. She then went on and looked at the stability of the disks and concluded that their exterior regions are gravitationally unstable and that stars should form there. She argues that the massive stars observed in the vicinity of the black hole in the centre of the Milky Way were formed in this manner.



Suzy Collin-Zahn was born and studied in Paris. Her first scientific interests were in the domain of plasma physics applied to the solar corona. She turned to the study of AGN in the early days of the subject and ever since contributed original elements to the slowly emerging puzzle. Suzy has led a lively research group in the Paris observatory for several decades. She contributed to astrophysics through her research, but also through her teaching, the popular books she wrote and her participation in national and international committees. Suzy Collin-Zahn is now emeritus associate astronomer at the Paris observatory.



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 29 nominated candidates for the three MERAC Prizes of 2013.

Best Early Career Researcher in Theoretical Astrophysics

The 2013 MERAC Prize for the Best Early Career Researcher in Theoretical Astrophysics is awarded to **Gabriella De Lucia** for her work on the theoretical modeling of galaxy formation and evolution. The models she has developed have reshaped our understanding of the physical processes that drive galaxy evolution, and in particular, of how these depend on the environment in which galaxies reside.



Gabriella De Lucia obtained a PhD in theoretical astrophysics at the Max-Planck Institute for Astrophysics (MPA, Garching, Germany) in 2004. In the same year, she was offered a 3-year (later extended to 5 years) postdoctoral position at MPA. In 2008, she was awarded a Starting Independent Researcher Grant from the European Research Council to set up a small research group at the Astronomical Observatory of Trieste, where she moved as a Senior Researcher in 2009. She is currently Astronomer of the Italian National Institute for Astrophysics at the Astronomical Observatory of Trieste.

Gabriella De Lucia has made key contributions to the connection between theoretical models of structure formation and the observed properties of galaxies at different cosmic epochs. She has explored this connection using several innovative techniques, which have brought important revisions to conventional interpretations of the observed properties of galaxies. The models she has developed have reshaped our understanding of the physical processes that drive galaxy evolution, and in particular, of how these depend on the environment in which galaxies reside.

The work has been carried out at the Max-Planck Institute for Astrophysics in Garching, Germany, and at the Astronomical Observatory of Trieste.

Best Early Career Researcher in Observational Astrophysics

The 2013 MERAC Prize for the Best Early Career Researcher in Observational Astrophysics is awarded to **Elisabetta Caffau** for the discovery of a very primitive low-mass star in our Galaxy whose chemical composition has changed our views on stellar formation in the early Galaxy and has spurred quite a number of innovative ideas about the formation of the first stars in the Early Universe.



After several years of work as professor in secondary schools in Italy, Elisabetta Caffau obtained a PhD in observational astronomy from Paris Observatory in 2009. After a one year post-doctoral position in Paris Observatory, E. Caffau obtained a three year "Gliese fellow grant" at the Zentrum für Astronomie of the University of Heidelberg. E. Caffau has developed a method to obtain high precision abundances of the elements from 3D hydrodynamical computations. With the infrared spectrograph CRIRES at ESO/MLT, she measured the phosphorus abundance of twenty cool stars in the Galactic disk for the first time.

Elisabetta Caffau applied her method to recognize the extremely metal poor stars in the crowd of low-resolution spectra provided by large spectroscopic surveys like the Sloan Digital Sky Survey. Thanks to this very efficient tool, she discovered in 2011 the most primitive star currently known (SDSS J1029+1729) and she defined its chemical composition. The discovery of a star with an extremely low abundance of all the elements from C to Zn, is considered as a key for our understanding of the formation of stars and chemical elements in the early history of the Milky Way.

The work has been carried out at the Centre for Astronomy of Heidelberg University (ZAH), at the Landessternwarte Königstuhl (LSW) and at the Department GEPI of Paris Observatory.

Best Early Career Researcher in New Technology

The 2013 MERAC Prize for the Best Early Career Researcher in New Technology is awarded to **Justin Read** for his high-impact research in computational astrophysics and cosmology by developing a new method, SPH-S, substantially improving the Smoothed Particle Hydrodynamics technique used, in particular, to model gas accretion in galaxy formation.



Justin Read obtained his PhD in theoretical astrophysics from Cambridge University, UK, in 2003. After a two-year postdoctoral research position, also in Cambridge, he moved to the University of Zürich to join the Institute for Theoretical Physics. In 2009, he joined the University of Leicester as a lecturer in theoretical astrophysics, and in October 2010 he was awarded an assistant professorship at ETH Zürich. Starting 2013 he took up a full Chair at the University of Surrey, Guildford, UK.

The MERAC Prize is awarded for his major achievements in the area of computational astrophysics. He has been able to improve substantially one of the two major computational methods adopted to model hydrodynamics in astrophysics, namely smoothed particle hydrodynamics (SPH). Since numerical simulations have become an essential part of astrophysics and cosmology over the past decade, often driving the interpretation of astronomical data, the impact of his work in the field is of primary importance, and will be even more so in the future. The method developed by Justin Read, called SPH-S, overcomes two related long-standing problems of standard SPH, namely its inability to resolve mixing in fluids and capture instabilities at fluid interfaces.

The work has been conducted at the University of Zürich and ETH Zürich, as well as in Leicester and Heidelberg.