

# IUPAP Commission 19 (Astrophysics) - Activity report 2014/2015

## 1. Commission membership 2014-2017

Chair: Grazina Tautvaišienė [*Lithuania*]  
Vice-chair: Gerry Gilmore [*United Kingdom*]  
Secretary: Patrick Woudt [*South Africa*]  
Members: Petr Hadrava [*Czech Republic*]  
Shuang-Nan Zhang [*China*]  
Chanda Jog [*India*]  
Michel Rieutord [*France*]  
Rafael Rebolo [*Spain*]  
Marat Mingaliev [*Russian Federation*]  
Andreas Burkert [*Germany*]  
Sabine Schindler [*Austria*]  
Sung Won Kim [*Korea*]  
Chryssa Kouveliotou [*United States*]  
Pietro Ubertini [*Italy*]

Associate members (2013-2015): Wieping Liu [*China*]  
Virginia Trimble [*United States*]

The following people have been nominated as associate members of Commission 19 for the next term:

Hans Kjeldsen [*Denmark*] - Prof Kjeldsen works at Aarhus University since 2013. He is a member of Kepler Astro-seismic Investigation Steering Committee. In 2011, he was awarded by the NASA Group Achievement Award for outstanding science guidance and exemplary creativity and dedication in connection to the Kepler on-orbit operations and science.

Weiping Liu [*China*] - Prof Liu is an associate president at the China Institute of Atomic Energy since 2005. He was nominated to the position of an associate member of C19 by the IUPAP C12. He is an active associate C19 member presently.

Keiichi Maeda [*Japan*] - Prof Maeda works at the Physics Department, Waseda University, since 1989. He is an author of a monograph "The Scalar-Tensor Theory of Gravitation" (Cambridge University Press, 2003, with Y. Fujii). He was nominated to the position of an associate member of C19 by Masaki Mori, a liaison from the Japanese Science Council to IUPAP and a member of IUPAP C4 commission.

Virginia Trimble [*United States*] - Prof Trimble joined the faculty of the University of California, Irvine in 1971. She was awarded the NAS Award for Scientific Reviewing of the National Academy of Sciences (1986), Klopsteg Memorial Award (2001), George Van Biesbroeck Prize (2010). She is a former vice-president of the International Astronomical Union. She is active as an associate C19 member presently.

## 2. IUPAP Young Scientist Prize in Astrophysics: 2014 and 2015

Commission 19 received a large number of outstanding nominations for the 2014 and 2015 IUPAP Young Scientist Prize in the field of Astrophysics. The commission selected the following two winners:

**2014** - Dr Nanda Rea (*University of Amsterdam, NL*) for her valuable contribution to the study of neutron stars. In particular for the discovery that magnetars can have low dipolar magnetic fields in line with the normal pulsar population, at variance with the long-standing belief that the electron critical magnetic field was a lower limit for magnetar-activity to take place.

**2015** - Dr Sylvain Guiriec (*University of Maryland, USA*) for his insightful and innovative contributions towards understanding the nature of gamma ray burst prompt emission, in particular the establishment of multi-component spectra, and the discovery of a new Peak Energy – Luminosity relation showing that GRBs can be used as standard candles and thereby as unique cosmological probes.



**Nanda Rea** was born in 1978 in Rome, Italy. She graduated from the University of Tor Vergata/INAF- Astronomical Observatory of Rome in 2006. Since then she spent several years with different post-doctoral fellowships (at SRON and The University of Amsterdam). In 2009 she started a 5 year tenure-track at the Institute for Space Sciences (ICE) in Barcelona, part of the CSIC (the Spanish National Research Council). In 2014 she was awarded an NWO Vidi grant to build a research group in The Netherlands. She is currently a tenured staff scientist at CSIC, and a research group leader at the Anton Pannekoek Institute of the University of Amsterdam.

Since her PhD years, Nanda Rea has worked on several aspects of neutron stars, both observationally and on the interpretation side. She was invited for colloquia and seminars in many worldwide institutes (Harvard, NYU, Max Plank, University of Sydney, ATNF, IAC, and others). In 2014 she was awarded the Zeldovich Medal for Astrophysics and Space Science from COSPAR and the Russian Academy of Science, for her crucial contribution to the understanding of neutron stars with strong magnetic fields.



**Sylvain Guiriec** was born in 1978 in Brest, France. In 2002 – 2003, he obtained a Masters degree in Material Sciences as well as an Engineering degree in Atomic and Molecular modeling and simulation, and computational structural analysis and design from the Institut Supérieur des Matériaux du Mans, France. He worked for two years as a young researcher at the Oak Ridge National Laboratory, USA, and at the Universitat Politècnica de Catalunya, Spain, where he studied radiation damage for the nuclear research field. In 2004, he obtained a Masters degree in Astrophysics, Planetology and Space Sciences & Techniques and an Engineering degree in Space Sciences & Techniques from Paul Sabatier University and the Institut Supérieur de l'Aéronautique et de l'Espace (SUPAERO), France. He received his PhD in December

2007 in Astrophysics from the Montpellier II University, France. His thesis was both theoretical and instrumental: (i) he studied the theoretical aspects of GRBs and made predictions of observability with the *Fermi* Gamma-ray Space Telescope (*Fermi*), and (ii) he participated to the integration and tests of the *Fermi*/Large Area Telescope (LAT), for which he developed an algorithm for suppressing its proton background.

After the launch of *Fermi* mid-2008, Sylvain Guiriec joined the National Space Science and Technology Center, USA – associated to the NASA Marshall Space Flight Center – with a 3-year postdoctoral position at the University of Alabama in Huntsville, USA. His main efforts focused on the observational analysis of GRBs, leading to the discovery of the first clear evidence for photospheric emission in their prompt emission. He also worked on Magnetars, Solar Flares and Terrestrial Gamma-ray Flashes. Since 2011 Sylvain Guiriec worked at NASA Goddard Space Flight Center, USA, first as a fellow of the NASA Postdoctoral Program and then as an Assistant Research Scientist affiliated with the University of Maryland, College Park and the Center for Research and Exploration in Space Science & Technology.

The two winners of the IUPAP Young Scientist Prize in Astrophysics have been invited to present their work at the Texas Symposium for Relativistic Astrophysics, where the IUPAP medal will be awarded. The 28th edition of the Texas Symposium will be held 13-18 December 2015 in Geneva, Switzerland.

### 3. Sponsored conferences by Commission 19

In 2015, the 28th Texas Symposium on Relativistic Astrophysics (13-18 December 2015, Geneva, Switzerland) has been selected for support from IUPAP. Commission 19 members *Grazina Tautvaišienė*, *Virginia Trimble* and *Shuang-Nan Zhang* are part of the Scientific Organising Committee (SOC) of the 28th Texas Symposium on Relativistic Astrophysics.

For 2016, Commission 19 expressed their strong support for the 3rd PANDA Symposium on Multi-wavelength Time Domain Astronomy, to be held from 30 May to 3 June 2016 in China. Commission 19 members *Chryssa Kouveliotou*, *Weiping Liu*, *Michel Rieutord*, *Grazina Tautvaišienė*, *Virginia Trimble*, *Pietro Ubertini*, *Patrick Woudt* and *Shuang-Nan Zhang* are part of the SOC of the 3rd PANDA Symposium.

### 4. Meeting of Commission 19

Eight members of Commission 19 met on 7 August 2015 in Hawaii during the XXIX General Assembly of the IAU. This was the first face-to-face meeting for many members and associated members of Commission 19. The meeting was organised by the chair of Commission 19.

During the meeting in Hawaii, members of Commission 19 were acquainted with research activities by commission members and discussed the possibility of supporting the 3rd PANDA Symposium on time-domain astrophysics in China in 2016.



Members of Commission 19 at the XXIX General Assembly of the IAU in Hawaii. From left to right: *Michel Rieutord*, *Weiping Liu*, *Grazina Tautvaišienė*, *Pietro Ubertini*, *Virginia Trimble*, *Chryssa Kouveliotou*, *Patrick Woudt* and *Shuang-Nan Zhang*.

### 5. Update of the Commission 19 web site

The web site of Commission 19 has undergone a number of changes and updates. For the latest version see: <http://iupap.org/commissions/c19-astrophysics/>

This report has been compiled on 23 September 2015 by:  
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Grazina Tautvaišienė, Chair Commission 19