

Report of Affiliated Commission AC2 for 2014–2017  
AC.2 is the International Society on General Relativity and Gravitation (ISGRG)  
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## Conferences

The International Society on General Relativity and Gravitation (AC2) held its triennial GR conference in 2016. The 21st International Conference on General Relativity and Gravitation, GR21, was held on 10 – 15 July 2016 at Columbia University. The scientific highlights of the meeting were talks and activities related to the first direct detection of gravitational waves by the LIGO Scientific Collaboration and the Virgo Collaboration—a momentous celebration of the Centennial of Einstein's first presentation of general relativity in November 1915. Approximately 650 registered participants attended the meeting. Sponsorship from IUPAP for this meeting, and AC2's own limited funds, assisted some of these participants. As usual, the conference had plenary talks in the morning, covering the whole field of AC2's interests. In the afternoons there were parallel sessions with contributed papers and poster sessions. There were 15 plenary talks (5 of the speakers being women) and 17 parallel sessions (7 of the chairs being women). Abstracts and slides of talks are available at <http://www.gr21.org/GR21FullAbstractBooklet.pdf> and <http://www.gr21.org/program.html> respectively.

The next meeting, GR22, is scheduled for July 2019 in Valencia, Spain. The Scientific Organizing Committee, chaired by Prof. Vitor Cardoso (Instituto Superior Técnico, Portugal) has formed and is beginning its work. This meeting will be held in conjunction with Amaldi13, the biennial meeting organized by WG11 (Gravitational Wave International Committee: GWIC). WG13 (Newtonian Constant on Gravitation) will also participate in this meeting.

## Prizes

*The IUPAP Young Scientist Prize in General Relativity and Gravitation* was first awarded at GR20 in 2013. Since then, the recipients have been

2014: Jorge E. Santos, Stanford University and Cambridge University, "for finding the first example of a classical gravitational instability of an asymptotically flat vacuum higher-dimensional black hole solution; for using numerical methods to construct novel anti-de Sitter black hole solutions and using these to explore the connections between gravitational systems and inhomogeneous strongly coupled condensed matter systems."

2015: Nicolas Yunes, Montana State University, "for his wide-ranging and important contributions to the field of gravitational wave astrophysics."

2016: Ivan Agullo, Louisiana State University, "for his outstanding contributions to the physics of the early universe and possible observational consequences of quantum gravity."

2017: Aron C. Wall, Institute for Advanced Studies, "for his fundamental contributions to our understanding of gravitational entropy and the generalized second law of thermodynamics."

The first three awardees were honored at GR21, and the last will be honored at GR22. Note that the medal and check are given to each winner in the year of the award. Nominations will open on 1 November 2017 for the 2018 prize.

*Triennial Thesis Prizes:* ISGRG offers two thesis prizes, the Jürgen Ehlers Thesis Prize in the areas of mathematical and numerical general relativity and the Bergmann-Wheeler Thesis Prize in the broad area encompassing all approaches to quantum gravity. The Ehlers Prize was presented to William East (Princeton University) and the Bergmann-Wheeler Prize to Lisa Glaser (Neils Bohr Institute). Nominations for the 2019 thesis prizes are currently open and will remain open through August 2018. The awards will be made at GR22.

*Best talk awards:* The Hartle Prizes for best student presentations at GR21 were given to Beatrice Bonga (Penn State, USA), Maria Charisi (Columbia University, USA), Lin-Qing Chen (Perimeter Institute, Canada), Philippe Landry (University of Guelph, Canada), Adam Levi (Technion, Israel), Maria Okounkova (Caltech, USA), Katharina Radermacher (KTH Royal Institute of Technology, Sweden), Helgi Freyr Rúnarsson (University of Aveiro, Portugal), John VanLandingham (University of Maryland, USA), and Serena Vinciguerra (University of Birmingham, UK). The Chandrasekhar Prizes for the best postdoctoral presentations at the meeting were awarded to David Fajman (University of Vienna, Austria), Dustin Madison (NRAO, USA), Ian Morrison (McGill University, Canada), and Adam Pound (University of Southampton, UK).

### **Interaction with National Organizations in General Relativity and Gravitation**

Following a successful event at GR20, AC2 repeated its reception for representatives of our national organizations at GR21. These organizations range in character from mailing lists to independent societies. Many are groups within larger physics societies. The representatives presented brief summaries of their organizations. Discussions centered on common issues and possible future joint activities. Representatives from organizations in Australasia, China, Germany, India, Italy, Japan, Poland, Portugal, Russia, Spain, UK, and USA participated along with the AC2 President and the Secretaries of AC2 and GWIC. Current information on the national organizations may be found at [http://www.isgrg.org/related\\_organizations.php](http://www.isgrg.org/related_organizations.php).

### **The Centennial of General Relativity**

On November 25, 1915, in Berlin, Albert Einstein presented for the first time the complete field equations for his theory of General Relativity. ISGRG as well as gravitational physicists around the world marked the centennial of this event in many ways. ISGRG endorsed a conference held from 30 November to 5 December 2015 in Berlin (near the site of the original presentation). It was organized jointly by the Max Planck Institutes for Gravitational Physics (Albert Einstein Institute) and History of Science. The first part of the meeting consisted of reviews of current research frontiers in physics and astronomy that are impacted by general relativity. The second part consisted of an historical examination of the development of the theory and its integration into mainstream physics.

Also in honor of the General Relativity centennial, ISGRG commissioned a volume of essays by distinguished authors, edited by A. Ashtekar, B. Berger, J. Isenberg, and M. MacCallum, entitled "General Relativity and Gravitation: a Centennial Perspective." The volume was published by Cambridge University Press, in June 2015. Any royalties will accrue to ISGRG to support its programs. A conference sponsored by ISGRG was held at the Pennsylvania State University, 8 – 12 June 2015, to commemorate the release of this volume.

ISGRG also launched a Centennial Membership Drive to increase participation in our Society.

The year 2015 saw both the centennial of general relativity and the detection of gravitational waves from merging black holes. These milestones were described in the IUPAP Newsletter by Gary Horowitz ("100 Years of General Relativity," IUPAP Newsletter, December 2015) and Albert Lazzarini ("The Discovery of a Binary Black Hole Merger by LIGO," IUPAP Newsletter, March 2016) respectively.

### **AC2 International Committee Meetings and General Assembly at GR21**

The Commission itself (alias the Society's Committee) held 3 meetings during GR21. IUPAP support for Commission meetings was used to enable a number of less well-funded members, in particular IUPAP representatives and those from developing countries, to be present.

The first meeting reviewed the previous three years' activities and included reports from the editors of the Society's journal, from GWIC, from IUPAP C&CC meetings, and from its information website. The purpose of the second meeting was to hear bids for the site of the next meeting. It was agreed that GR22 will be held in Valencia, Spain in July 2019. As for GR20, this meeting will be held jointly with the GWIC-sponsored Amaldi13 conference on gravitational waves.

This GR22/ Amaldi13 recommendation was accepted by the General Assembly of the Society, which also elected new officers and committee members in accordance with the constitution. Eric Poisson became President, Beverly Berger was reelected as Secretary, while the previous president, Gary Horowitz, automatically became Deputy President. The Assembly also reviewed membership, finance and administration and heard the reports from the journal, GWIC, IUPAP, and Hyperspace.

The third committee meeting was to complete essential business including selection of regions for the 8 open International Committee slots for the 2019 election and suggestions for the Chair of the Scientific Organizing Committee for GR22.

### **Liaison with IUPAP**

By a long-standing agreement, IUPAP appoints four members of the AC2 Committee, each for a six-year term, two changing after every GR<sub>n</sub> conference. AC2 itself nominates possible IUPAP members, seeking, in doing so, to improve geographic, subject, and/or gender balance among its members. The two IUPAP members retiring in 2016 are Nadja Magalhaes (Brazil) and David

McClelland (Australia). The continuing IUPAP members are Rong-Gen Cai (China) and Sharon Morsink (Canada). AC2 proposed as the new IUPAP members Gustavo Dotti (Universidad Nacional de Córdoba, Argentina) and David Wiltshire (University of Canterbury, New Zealand). The IUPAP Council approved these nominations in October 2016.