

Submittee: Gabor Kunstatter

Date Submitted: 2016-07-19 07:50

Title: 16th Canadian Conference on General Relativity and Relativistic Astrophysics

Event Type: Conference-Workshop

Location:

Simon Fraser University, Harbour Centre, Vancouver, BC

Dates:

July 6-8, 2016

Topic:

General Relativity and Relativistic Astrophysics

Methodology:

There were 12 invited talks of 45 minutes duration, on topics that included observational astrophysics, cosmology, numerical relativity, and quantum gravity. In addition there were 40 contributed talks 20 minutes in length given in 5 parallel sessions and 4 posters. On the first night of the conference Vicky Kaspi (McGill University) delivered a public lecture attended by nearly one hundred attendees from the conference and the general public.

Objectives Achieved:

The meeting succeeded in fulfilling the goals of the CCGRRA conference series by bringing together Canadian and international researchers, including students, for extensive scientific discussion and exchange of ideas. Undoubtedly several new collaborations emerged from these exchanges. In addition, the evening lecture by Vicky Kaspi raised public awareness of the strength of the general relativity community.

Scientific Highlights:

One of the most exciting developments in Physics of this century was the observation by LIGO of gravitational waves from the merger of two black holes. Two of the plenary lecturers were members of the LIGO scientific team. They gave excellent lectures summarizing experimental techniques, data and implications for astrophysics and cosmology. Vicky Kaspi, NSERC's 2016 Gerard Herzberg Medal recipient, described the fascinating new, as yet unexplained, phenomenon of fast radio bursts, both at the Conference and during her public lecture. In addition to the important new observational results, progress in several mathematical and theoretical areas were reported, including uniqueness of solutions in higher dimensional Lovelock gravity and modified dynamics in quantum gravity.

Organizers:

Frolov, Andrei, Physics Department, Simon Fraser University;
Kunstatter, Physics Department, University of Winnipeg;
Pogosian, Levon, Physics Department, Simon Fraser University

Speakers:

Invited Speakers (Contributed abstracts can be found in attached .pdf file):

Matt Choptuik, University of British Columbia

Title: Black hole formation in Randall-Sundrum II braneworlds

Abstract: I will discuss the first numerical study of the full dynamics of a braneworld scenario, including black hole formation, working within the framework of the single brane model of Randall and Sundrum.

Valeri Frolov, University of Alberta

Title: Ghost-free gravity and black holes

Abstract: Black-hole formation in the gravitational collapse and in the collision of ultra-relativistic particles in the framework of the ghost-free gravity is discussed.

David Garfinkle, Oakland University

Title: Gravitational Wave Memory

Abstract: Gravitational waves are detected by the stretch and squeeze that they induce in laser interferometers. Even after the wave has passed, there is a residual stretch and squeeze, called gravitational wave memory.

Jack Gegenberg, University of New Brunswick

Title: Gravitational Yang-Mills Theories

Abstract: I will review the history of attempts to cast gravity in the form of a Yang-Mills gauge theory, with emphasis on the case where the gauge group is $SO(4,2)$. I will conclude with a discussion of cosmology in this setting.

Gil Holder, McGill University

Title: Gravity on large scales: gravitational lensing of the CMB

Abstract: Lensing of the CMB can be used to track the growth of structure in the universe, measure the relation between galaxies and dark matter, and test gravity of large scales. I'll discuss some recent results from the South Pole Telescope.

Vicky Kaspi, McGill University

Title, technical talk: Fast Radio Bursts

Title, public lecture: The Fast Radio Sky

Luis Lehner, Perimeter Institute,

Title: Gravitational waves and binary neutron stars

Abstract: The recent detection of gravitational waves has officially marked the beginning of "gravitational wave astronomy". This talk will describe challenges and opportunities binary neutron star systems will bring.

Gregory Mendell, California Institute of Technology

Title: Astrophysical reach of the Advanced LIGO detectors

Abstract: The talk will cover the astrophysical implications of the first Advanced LIGO search results and, in particular, how these lead to estimates of the binary black hole merger rate. The prospects

for future runs will be discussed.

Don Page, University of Alberta

Title: Naked Firewalls

Abstract: Firewalls are assumed to be hidden at or inside event horizons. But quantum fluctuations of the Hawking emission rate can cause the "teleological" event horizon to have migrated to the inside of the firewall location, rendering the firewall naked.

Jocelyn Read, California State University, Fullerton

Title: Gravitational wave sources and discoveries

Abstract: I will give an overview of the gravitational-wave sky, sources for the Laser Interferometer Gravitational-wave Observatory, LIGO's recent discovery of merging black holes and the measurement of the source system's masses and spins.

Dan Stoikovic, University of New York at Buffalo

Title: Non-locality and non-singularity in gravitational collapse

Abstract: We study the end stages of gravitational collapse using the functional Schrodinger formalism. We solve the non-local equation of motion and find that the wavefunction and the corresponding probability density are non-singular at the origin.

David Wands, University of Portsmouth

Title: A relativistic approach to large-scale structure

Abstract: As high-redshift galaxy surveys probe ever larger volumes I will discuss how standard Newtonian results for the growth of large-scale structure can be understood within a consistent relativistic framework.

Links:

Conference Website:

<http://www.sfu.ca/physics/cosmology/CCGRRA-16/>

Comments / Miscellaneous:

I have attached the expenses summary, the poster advertising Vicky Kaspi's public lecture (which was funded by SFU), the front page of the folder distributed to all participants, showing the logo's of the funding agencies and the complete list of abstracts included in the folder.

File Uploads:

Additional Upload 1: http://www.pims.math.ca/files/final_report/expenses_summary.pdf

Additional Upload 2: http://www.pims.math.ca/files/final_report/KaspiPoster.pdf

Additional Upload 3: http://www.pims.math.ca/files/final_report/folder.pdf

Additional Upload 4: http://www.pims.math.ca/files/final_report/abstracts_8.pdf
