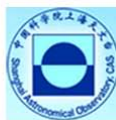


PROGRAM



Monday morning, July 2nd, 2012
Stockholm University - Aula Magna Plenary Hall

09:00 - 09:35

Welcome message by Prof. Kåre Bremer
President of Stockholm University

Opening of the 13th Marcel Grossman Meeting

Chairperson: Remo Ruffini

Presentation of the Marcel Grossmann Awards

Institutional Award

AlbaNova University Center – recipient Kåre Bremer

Individual Awards

David Arnett, Vladimir Belinski, Isaak Khalatnikov, Filippo Frontera

Plenary Session: Mathematics and Relativity

Chairperson: Vladimir Belinski

09:35 - 10:10 Hermann Nicolai

Hidden symmetries: from BKL to Kac-Moody

10:10 - 10:45 Claes Uggla

Spacetime singularities: Recent developments

10:45 - 11:05 coffee break

11:05 - 11:40 Sergiu Klainerman

Recent developments in mathematical GR

11:40 - 12:15 Harvey Reall

Black holes in higher dimensions

20:30 - 22:00 Monday evening Public Lecture by:

Mario Livio *“The greatest scientific achievements of the Hubble space telescope”*

Monday afternoon, July 2nd 2012 Parallel Sessions

AlbaNova University Center, 14:00–18:30

AN1a	Post-Newtonian and Analytic Approximations (Luc Blanchet)	FB42
AN2	Interfacing Analytical and Numerical Relativity (Alessandra Buonanno, Alessandro Nagar);	A3:1003
AN3	Gravitational Self-Force and Astrophysical Binaries of small mass ratios (Leor Barack)	
AP1	DAMA and Related Experiments (Rita Bernabei)	FP41
AT1	Higher dimensional General Relativity (Harvey Reall)	FA31
AT2a	Extended Theories of Gravity (Salvatore Capozziello)	FD51
BH4	Black Hole Evaporation, Holographic Principle, and Entropic Gravity (Pisin Chen)	FB41
CM1	Inflation (Misao Sasaki)	FD41
CM2a	Dark Energy and the Accelerating Universe (Alexei Starobinski, David Polarski)	FD5
CM4	Quantum Cosmology and Quantum Effects in the Early Universe (Paulo Moniz)	FB55
EG1	Experimental Gravitation (Claus Laemmerzahl)	132:028
GRB2	First Minutes of GRBs: physics of prompt emission, central engine, and progenitor (Bing Zhang, Pawan Kumar)	FA32
GT2	Cosmological Singularities and Asymptotics (Spiros Cotsakis)	A5:1003
GT3a	Theoretical Issues in GR (Dieter Brill)	FB52
GT4	Exact Solutions (Physical Aspects) (Susan Scott)	FB53
GT5	Quantum Fields (Vladimir Belinski)	FB51
GW1	Sources of Gravitational Waves (Andrew Melatos)	A4:1003
OC1	Supernova Cosmology and the Accelerating Universe (Ariel Goobar, Jesper Sollerman)	FR4
QG2a	Quantum Gravity Phenomenology (Giovanni Amelino-Camelia)	FB54
SF1	Origin and physics of Soft Gamma-ray Repeaters and Anomalous X-ray Pulsars (Sandro Mereghetti, Manuel Malheiro)	122:026
ST1	Planckian and Transplanckian Physics (Dmitri Galtsov)	BC A5:1041
TC1	Supermassive Black Holes in Cosmic Structure Formation: Nature and Origin (Lucio Mayer)	AC A5:1041

Tuesday morning, July 3rd, 2012
Stockholm University - Aula Magna Plenary Hall

Plenary Session: Quantum and Gravity

Chairperson: Hagen Kleinert

09:00 - 09:35 Frederik Denef
String Glasses

09:35 - 10:10 Jan Ambjorn
Lattice gravity: overview and recent progress

10:10 - 10:30 coffee break

10:30 - 11:05 Petr Horava
Gravity with Anisotropic Scaling and the Multicritical Universe

11:05 - 11:40 Martin Reuter
QEG: Towards an Asymptotically Safe Quantum Theory of Gravity

11:40 - 12:15 Zvi Bern
Perturbative Quantum Gravity as a Double Copy of Gauge Theory and Implication for UV Properties

19:00 Reception at Stockholm City Hall

Tuesday afternoon, July 3rd 2012 Parallel Sessions

AlbaNova University Center, 14:00–18:30

AN1b	Post-Newtonian and Analytic Approximations (Luc Blanchet)	FB42
AP2	Active Galactic Nuclei at High Energies (Paolo Giommi, Felix Aharonian)	FB55
AT2b	Extended Theories of Gravity (Salvatore Capozziello)	FD51
BH2	Magneto-Plasma Processes in Relativistic Astrophysics (Gennady Bisnovaty-Kogan, Sergej Moiseenko)	132:028
CM2b	Dark Energy and the Accelerating Universe (Alexei Starobinski, David Polarski)	FD5
EG2	Variation of Fundamental Constants (Victor Flambaum)	FP41
EG4	Self-Gravitating System (David Merritt)	FR4
GRB3	Observations vs. Theory in the Swift Era (Sergio Campana, Massimo Della Valle)	FB52
GT3b	Theoretical Issues in GR (Dieter Brill)	FB51
GW2	Gravitational Wave and Multimessenger Astronomy (Fulvio Ricci, Szabolcs Marka)	A4:1003
OC2	Observational Gravitational Lensing [Microlensing] (Philippe Jetzer)	A5:1003
QG1a	Loop Quantum Gravity, Quantum Geometry, Spin Foams (Jerzy Lewandowski)	FA32
QG2b	Quantum Gravity Phenomenology (Giovanni Amelino-Camelia)	FA31
SF2	Nuclear Physics and Astrophysics (Johann Rafelski, Jorge Rueda)	FB53
SG1/2	GR around the Earth and the Sun (Roberto Peron, Neil Ashby)	122:026
SN1	Two-Dimensional Codes for Supernova Explosions (David Arnett, Casey Meakin)	FB54
SO3	Observations from High Energy Astrophysics Satellites (Norbert Schulz, Elena Pian)	A3:1003
ST3	Multivalued Fields for Defects in Spacetime and Gravity (Hagen Kleinert, Mikhail Katanaev)	FD41
TC2	Supermassive Black Holes in Cosmic Structure Formation: Coalescence and Effect on Galaxy Formation (Lucio Mayer)	FB41

Wednesday morning, July 4th, 2012
Stockholm University - Aula Magna Plenary Hall

Plenary Session: Supernovae and their outcomes

Chairperson: David Blair

- 09:00 - 09:35 Ariel Goobar
Supernova Cosmology: Past and future
- 09:35 - 10:10 Robert Kirshner
The accelerating universe: a Nobel surprise
- 10:10 - 10:45 David Arnett
Stellar turbulence and why we should care
- 10:45 - 11:05 coffee break
- 11:05 - 11:40 Jorge Rueda
Strong, Weak, Electromagnetic and Gravitational Interactions in Neutron Stars
- 11:40 - 12:15 Luciano Rezzolla
Using numerical relativity to explore fundamental physics and astrophysics
- 12:15 - 12:50 David Reitze
Ground-based Gravitational-wave Astronomy Using Interferometers: Past and Future
- 19:30 Official Banquet at "Solliden Restaurant" at Skansen

Thursday morning, July 5th, 2012
Stockholm University - Aula Magna Plenary Hall

**Plenary Session: Cosmology and Gamma Ray Bursts: Neutron Stars and
Black Holes**

Chairperson: Roy Kerr

09:00 - 09:35 Tsvi Piran
Electromagnetic Signals from Neutron Star Mergers

09:35 - 10:10 Bing Zhang
Open Questions in GRB Physics

10:10 - 10:45 Remo Ruffini
*GRBs and the Supernova-Neutron-Star-Black-Hole
Sequence*

10:45 - 11:05 coffee break

11:05 - 11:40 Michael Kramer
Precisions tests of theories of gravity using pulsars

11:40 - 12:15 Piero Madau
Connecting the Dark and Light Side of Galaxy Formation

20:30 - 22:00 Thursday evening Public Lecture:
“Fang Li Zhi and Relativistic Astrophysics”

Thursday afternoon, July 5th 2012 Parallel Sessions

AlbaNova University Center, 14:00–18:30

AN4/5	Numerical Simulations of Binary Black Holes (Pablo Laguna); Numerical Analysis of Coalescing Binaries (Masaru Shibata)	132:028
AT3a	Gravitational Fields with Sources, Regular Black Holes, Quasiblack Holes, and Analog Black Holes (José Lemos, Paolo Pani)	FB42
AT4a	Modified Gravity (Fawad Hassan, Shinji Mokuhyama)	FD5
BH1	Black Holes in Higher Dimensions (Black Rings and Black Strings) (Jutta Kunz)	A5:1041
BH3a	Black Holes (Roy Kerr, Jacob Bekenstein)	FR4
CB1/2a	CMB Experiments (Silvia Masi, Paolo De Bernardis); Astrophysics from the radio to submillimetre - Planck Mission (Carlo Burigana, Hans-Ulric Noorgard-Nielsen)	FA32
EG3	Compact Binaries and Strong-Field Tests of Gravity (Michael Kramer)	FA31
GRB4	GRB: correlations and central engine (Sergio Campana, Massimo Della Valle)	FD51
GW3	Status of the Gravitational Wave Detectors (David Blair, Jean-Yves Vinet)	FB51
OC4a	New developments in the study of the large scale structure of the Universe (Enn Saar, Rien van de Weygaert)	FP41
QG1b	Loop Quantum Gravity, Quantum Geometry, Spin Foams (Jerzy Lewandowski)	FB53
QG3	Asymptotic Safeness and Symmetry Breaking in Quantum Gravity (Eckehard Mielke)	FB54
QG4a	Loop quantum gravity: cosmology and black holes (Jorge Pullin, Parampreet Singh)	FB52
SF3	Strong Fields and High Energy Astrophysical events (Christian Ghezzi, She-Sheng Xue)	122:026
SG3	Lisa Pathfinder and Space-Borne Gravitational Wave Detectors (Stefano Vitale)	FB55
SG4	GP-B and Lense-Thirring Measurements (Turki Al-Saud)	FB41
SN3	Supernova Explosions and Neutron Star Oscillations (Kostas Kokkotas, Ewald Mueller)	A4:1003
SO1	Spectral and timing Properties of Astrophysical Black Holes (Sandip Chakrabarti)	A5:1003
SO4	White Dwarf Pulsars and Rotating White Dwarf Theory (Yukikatsu Terada)	A3:1003
ST2	String Theory (Mans Henningson)	A5:1069
TC3	Inhomogeneous Cosmologies, Averaging and Back Reaction (Alan Coley, David Wiltshire)	FD41

Friday morning, July 6th, 2012
Stockholm University - Aula Magna Plenary Hall

Plenary Session: Cosmic Background Radiation

Chairperson: Paolo De Bernardis

09:00 - 09:35 Charles Bennett
WMAP

09:35 - 10:10 Nazzareno Mandolesi
Planck and fundamental Physics

10:10 - 10:45 Jean-Loup Puget
High energy Planck Mission

10:45 - 11:05 coffee break

11:05 - 11:40 Sunyaev Rashid
*Unavoidable CMB spectral features and Black Body
Photosphere of our Universe*

11:40 - 12:15 John Carlstrom
*Cosmology with the thermal and kinetic Sunyaev-
Zel'dovich effects*

12:15 - 12:50 David Spergel
Connecting the Dark and Light Side of Galaxy Formation

20:30 - 22:00 Thursday evening Public Lecture by:

Carlos Frenk *“Everything from nothing: how our universe
was made”*

Friday afternoon, July 6th 2012 Parallel Sessions
AlbaNova University Center, 14:00–18:30

AP3	Ultra High Energy cosmic rays (Karl-Heinz Kampert, Cao Zhen)	132:028
AP4	News from LHC (Carlo Dionisi, Luciano Maiani)	FB42
AT3b	Gravitational Fields with Sources, Regular Black Holes, Quasiblack Holes, and Analog Black Holes (José Lemos, Paolo Pani)	FD41
AT4b	Modified Gravity (Fawad Hassan, Shinji Mokuhyama)	FD51
BH3b	Black Holes (Roy Kerr, Jacob Bekenstein)	FR4
CB1/2b	CMB Experiments (Silvia Masi, Paolo De Bernardis); Astrophysics from the radio to submillimetre - Planck Mission (Carlo Burigana, Hans-Ulric Noorgard-Nielsen)	FA32
CM2c	Dark Energy and the Accelerating Universe (Alexei Starobinski, David Polarski)	FD5
CM3	Nonsingular Cosmology (Nelson Pinto-Neto)	FB41
GRB1	Photospheric Emission in GRBs (Felix Ryde, Gregory Vereshchagin)	FB52
GRB5	Models for GRBs (Shiho Kobayashi, Tsvi Piran)	FB53
GT1	Exact Solutions in Four and Higher Dimensions: Mathematical Aspects (Georgy Alekseev)	FB55
GW4	Underground Gravitational Wave Detectors (Harald Luck, Albert Lazzarini)	A5:1003
HR1	History of Relativity and Cosmology (Christian Bracco)	A3:1003
OC3	Cosmology from GRBs (Lorenzo Amati, Daisuke Yonetoku)	FB54
OC4b	New developments in the study of the large scale structure of the Universe (Enn Saar, Rien van de Weygaert)	FP41
QG4b	Loop quantum gravity: cosmology and black holes (Jorge Pullin, Parampreet Singh)	FA31
SF4	Relativistic MHD Flows and Electron-Positron Plasma (Yu-Qing Lou)	A4:1003
SO2	Spectral and Timing Properties of Astrophysical Black Holes (Sandip Chakrabarti)	FB51
SO5	Future Experiments and Missions in X and Gamma Ray (Filippo Frontera, Shuangnan Zhang)	122:026

Saturday morning, July 7th, 2012
Stockholm University - Aula Magna Plenary Hall

Plenary Session: The Frontiers

Chairperson: Kjell Rosquist

09:00 - 09:35 Roy Kerr

09:35 - 10:10 Francis Everitt

10:10 - 10:45 Paolo De Bernardis

10:45 - 11:05 coffee break

11:05 - 11:25 Chiara Mariotti
Recent searches of the Standard Model Higgs within CMS

11:25 - 11:45 Domizia Orestano
Search for the Standard Model Higgs with the ATLAS detector

11:45 - 12:05 Luciano Maiani
LHC High-lights

12:05 - 12:40 Remo Ruffini
Concluding Remarks