

TABLE OF CONTENTS

Publications in this Series and Sponsors	v
Organizing Committees	vii
Marcel Grossmann Awards	ix
Preface	xiv
Inaugural Address	xviii

PART A

PLENARY AND REVIEW TALKS

The initial value problem using metric and extrinsic curvature JAMES W. YORK, JR.	3
Mathematics, physics and ping-pong YUVAL NEEMAN	17
Thermal decay of the cosmological constant into black holes CLAUDIO TEITELBOIM	28
Szekeres models and their wormholes CHARLES HELLABY, ANDRZEJ KRASINSKI	29
Dark matter halos as Bose-Einstein condensates EKEHARD W. MIELKE	40
Gravitational multipole moments ZOLTAN PERJES	60
Solutions of the ‘stream equation’ in the black hole magnetosphere CHUL HOON LEE	71
Structure formation in the universe by exact methods ANDRZEJ KRASINSKI, CHARLES HELLABY	81
Overview of D-brane worlds in string theory ANGEL M. URANGA	101
Tachyons, D-brane decay, and closed strings BARTON ZWIEBACH	141
String compactifications – old and new ATISH DABHOLKAR	149
Covariant quantization of the superstring NATHAN BERKOVITS	160
Limiting braneworlds with the binary pulsar RUTH DURRER, PHILIPPE KOCIAN	168

Cosmological instabilities from vector perturbations in braneworlds RUTH DURRER, CHRISTOPHE RINGEVAL, TIMON BOEHM	181
A perspective on quantum gravity phenomenology GIOVANNI AMELINO-CAMELIA	201
Principles of affine quantum gravity JOHN KLAUDER	216
What is nonrenormalizability and what to do about it JOHN KLAUDER	225
The universe from supersymmetric quantum cosmology PAULO R.L. VARGAS MONIZ	235
Developments in GRworkbench ANDREW MOYLAN, SUSAN M. SCOTT, ANTHONY C. SEARLE	255
Constants of nature? HAVARD SANDVIK	266
Gravitational wave detection: a survey of the worldwide program J. DEGALLAIX, DAVID BLAIR	286
Evidence for coincident events between the gravitational wave detectors EXPLORER and NAUTILUS GUIDO PIZZELLA	303
The LIGO gravitational wave observatories: recent results and future plans GREGORY HARRY	314
General relativity in space and sensitive tests of the equivalence principle CLAUS LÄMMERZAHL	342
Multiwavelength afterglows of gamma-ray bursts ELENA PIAN	361
Black hole physics and astrophysics: the GRB-supernova connec- tion and URCA-1 – URCA-2 REMO RUFFINI	374
Black holes from the dark ages: exploring the reionization era and early structure formation with quasars and gamma-ray bursts S.G. DJORGOVSKI	429
The diagnostic power of X-ray emission lines in GRBs MARKUS BOETTCHER	450
The collapsar and supernova models CHARLES D. DERMER	468

Spectral index and quasi-periodic oscillation frequency correlation in black hole (BH) sources: observational evidence of two phases and phase transition in BHs LEV TITARCHUCK, RALPH FIORITO	490
Extragalactic jets: the high energy view FABRIZIO TAVECCHIO	527
Observational evidence for intermediate-mass black holes in ultra- luminous X-ray sources EDWARD COLBERT	545
Formation of super-massive black holes WOLFGANG J. DUSCHL, PETER A. STRITTMATTER	565
Role of disk models in identifying astrophysical black holes SANDIP K. CHAKRABARTI	574
Clusters and superclusters in the Sloan and Las Campanas surveys JAAN EINASTO	586
Neutrino masses and mixings: a theoretical point of view CARLO GIUNTI	601
Black hole jet sources FELIX MIRABEL	621
The supermassive black hole at the center of our galaxy FULVIO MELIA	633
Binary-pulsar tests of strong-field gravity and gravitational radia- tion damping GILLES ESPOSITO-FARESE	662
Microlensing towards LMC and M31 PHILIPPE JETZER, SEBASTIANO CALCHI NOVATI	682
Status and results of the EROS-II microlensing OLIVER PERDEREAU	700
Frontiers in cosmic rays LUIS A. ANCHORDOQUI, CHARLES D. DERMER, ANDREAS RINGWALD	716
Anisotropies in ultrahigh energy cosmic rays JOHN SWAIN	736
Strong neutrino-nucleon interactions at ultrahigh energies as a solution to the GZK puzzle ZOLTAN FODOR, SANDOR D. KATZ, ANDREAS RINGWALD, HUITZU TU	756

Wave equation for sound in fluids with vorticity SANTIAGO E. PEREZ BERGLIAFFA	777
The stability of a bouncing universe MÁRIO NOVELLO	785
Bouncing cosmological models: theory and perspectives NELSON PINTO-NETO	803

PART B

PLENARY AND REVIEW TALKS

The largest optical telescopes: today VLT; tomorrow OWL JASON SPYROMILIO	831
Galactic compact sources observations with the IBIS telescope onboard the INTEGRAL satellite PAOLO GOLDONI, ANGELA BAZZANO, SERGEY KUZNETSOV	845
The Chaplygin gas as a model for dark energy VITTORIO GORINI, ALEXANDER KAMENSHCHIK, UGO MOSCHELLA, VINCENT PASQUIER	856
Gamma-ray burst progenitors confront observations DAVIDE LAZZATI	876
Remarks on dimensional reduction of multidimensional cosmological models ALEXANDER ZHUK, UWE GUENTHER	893
Radiative transfer in relativistic astrophysics: a summary ROBERTO TUROLLA	906
Brane inflation: from supergravity to tachyonic MARIA C. BENTO, ORFEU BERTOLAMI, ANJAN A. SEN	913
The effects of curvature correction terms on brane cosmology LEFTHERIS PAPANTONOPoulos	924
An experiment to detect gravity at sub-mm scale with high-Q mechanical oscillators L. HAIBERGER, M. WEINGRAN, H. WENZ, S. SCHILLER	936
Multiwavelength observation of WIMP annihilation ROBERTO ALOISIO	955
Intermediate mass black holes in NGC 253 and related objects KIMBERLY A. WEAVER	975
The binary black hole in NGC 6240 and related objects — their	

status, genesis and evolution STEFANIE KOMOSSA	985
Theodor Kaluza and his five-dimensional world DANIELA WUENSCH	998
Laboratory tests of gravitational physics using a cryogenic torsion pendulum E.C. BERG, M.K. BANTEL, W.D. CROSS, T. INOUE, R.D. NEWMAN, J.H. STEFFEN, M.W. MOORE, P.E. BOYNTON	1010
The new Earth gravity models and the measurement of the Lense-Thirring effect LORENZO IORIO	1027
Finite Casimir energies in renormalizable quantum field theory KIMBALL A. MILTON	1037
Dark energy and condensate stars: a quantum alternative to classical black holes PAWEŁ O. MAZUR, EMIL MOTTOŁA	1057
Chiral string compactifications with NSNS and RR fluxes ANGEL M. URANGA, JUAN F. G. CASCALES	1064
HAWC: a next generation all-sky VHE gamma ray telescope GUS SINNIS, JULIE E. MCENERY, ANDY SMITH	1084
Loop quantum cosmology and boundary proposals MARTIN BOJOWALD, KEVIN VANDERSLOOT	1105
Update on cosmic microwave background physics ALEJANDRO GANGUI	1120
Detectability of cosmic topology in a unified dark-matter and dark-energy framework MARTIN MAKLER, BRUNO C.C. MOTA, MARCELO J. REBOUÇAS	1133
Stationary circularly symmetric 2+1 gravity coupled to a differenti- tially rotating perfect fluid ALBERTO GARCÍA-DÍAZ	1152
Present status of MiniGRAIL VIVIANA FAFONE	1165
Doubly special relativity and quantum gravity phenomenology JERZY KOWALSKI-GLIKMAN	1185
Short-Range non-Newtonian gravity and constraints on it VLADIMIR MOSTEPANENKO	1199
AdS/CFT correspondence and string/gauge duality HENRIQUE BOSCHI-FILHO, NELSON R.F. BRAGA	1214

S-brane solutions with acceleration in models with exponential potentials	
V.D. IVASCHUK, V.N. MELNIKOV	1228

PARALLEL SESSIONS

• Matter, Dark Matter and CP Violation

Chairperson: Angela Olinto

Decay of accelerated protons and high energy astrophysics	
DOUGLAS FREGOLENTE, GEORGE E.A. MATSAS, DANIEL A.T.	
VANZELLA	1242

Supersymmetric dark matter	
KEITH OLIVE	1245

• Neutrino Physics, Astrophysics and Cosmology

Chairperson: H. Nunokawa , S. Hannestad and E. Nardi

Neutrino asymmetry in presence of gravitational interaction	
BANIBRATA MUKHOPADHYAY	1248

Measuring neutrino masses with supernova neutrinos	
ENRICO NARDI	1251

Neutrino oscillation induced by decoherence: general approach and a fit to KamLAND	
FERNANDO DE MELO, MARCELO GUZZO, ORLANDO PERES, PEDRO DE HOLANDA	1254

Cosmological massive neutrinos with nonzero chemical potential. I. Perturbations in cosmological models with neutrino in ideal fluid approximation	
GREGORY VERESHCHAGIN	1257

Determining neutrino parameters from future long-baseline oscil- lation experiments	
HISAKAZU MINAKATA, HIROSHI NUNOKAWA, STEPHEN PARKE	1260

Symmetric Textures in SO(10) and Neutrinos	
KALYANA T. MAHANTHAPPA, MU-CHUN CHEN	1263

Cosmological massive neutrinos with nonzero chemical potential: II. Effect on the estimation of cosmological parameters	
M. LATTANZI, H.W. LEE, R. RUFFINI, G.V. VERESHCHAGIN	1266

Present status of Spin Flavor Precession	
OMAR GUSTAVO MIRANDA	1269

• X-Ray Spectroscopy of High Energy Sources with the XMM-Newton Satellite	
--	--

Chairperson: Elena Pian

The high energy activity of the galactic nucleus measured with XMM-Newton and INTEGRAL	
ANDREA GOLDWURM	1272
Point-like and extended X-ray sources in the supernova remnant IC443	
FABRIZIO BOCCINO, ANDREI M. BYKOV	1277
XMM-Newton observations of black hole X-ray transients in quiescence	
J.M. HAMEURY, C. MOTCH, D. BARRET, J.-F. OLIVE, N. WEBB, J.-P. LASOTA, K. MENOU, J.E. MCCLINTOCK	1282
XMM-Newton Observations of GRB AFterglows	
JAMES REEVES	1285
Supernova 1987A: the latest evolution in X-Rays	
SANGWOOK PARK, DAVID N. BURROWS, GORDON P. GARMIRE, SVETOZAR A. ZHEKOV, RICHARD MCCRAY	1290
XMM observations of HerX-1	
SILVIA ZANE	1295

• Observations from the Chandra Observatory*Chairperson: N. Schulz*

The HELLAS2XMM 1dF Survey: a window on exotic hard X-ray selected sources	
CRISTIAN VIGNALI (ON BEHALF OF THE HELLAS2XMM COLLABORATION)	1300
Relativistic iron lines in galactic black holes: recent results and lines in the ASCA archive	
JON M. MILLER, ANDREW C. FABIAN, MICHAEL A. NOWAK, WALTER H.G. LEWIN	1303
The XMM-Newton view of NGC 4261 and NGC 6251	
MARIO GLIOZZI, RITA SAMBRUNA	1313

• Astrophysical Black Holes*Chairperson: Sandip Chakrabarti*

Stability of accretion disk around rotating black holes	
BANIBRATA MUKHOPADHYAY	1322
The search for black holes in the X-ray binaries: the growing	

evidence for the presence of the event horizons around some X-ray Novae	
JANUSZ ZIOLKOWSKI	1325
Limits to primordial black holes from the holographic principle	
JORGE ERNESTO HORVATH	1331
Photometric evidence of bullets in SS433 jets	
SANDIP K. CHAKRABARTI, A. NANDI, S. PAL, B.G. ANANDARAO, S. MONDAL	1333
A massive-jet ejection event from the microquasar Ss 433	
TARO KOTANI, SERGEI TRUSHKIN, NOBUYUKI KAWAI, SAMAR SAFI-HARB, MASAAKI NAMIKI	1337
Accretion disks in the black-hole backgrounds with a repulsive cosmological constant	
ZDENEK STUCHLIK, PETR SLANY, STANISLAV HLEDIK	1340
• Supermassive Black Holes	
<i>Chairperson: Fulvio Melia</i>	
Supermassive black hole binary system in active galactic nuclei	
ANDERSON CAPRONI	1343
The Chandra deep fields and the prevalence of super-massive black holes in the universe	
FRANZ BAUER	1346
• Binary Neutron Stars and General Relativistic Effects in Neutron Stars and Black Holes	
<i>Chairperson: M. Mendez</i>	
Implications of intermediate-mass black holes for gravitational radiation	
COLEMAN MILLER, EDWARD COLBERT	1353
Using gravitational-wave observations to constrain the parameters of bag model	
HAJIME SOTANI, KAZUNORI KOHRI, TOMOHIRO HARADA	1356
Catching the wildest waves: detection template families for precessing binaries of compact objects	
MICHELE VALLISNERI	1359
Numerical models of spin-orbital coupling in neutron star binaries	
PEDRO MARRONETTI, STUART L. SHAPIRO	1362
Electrically charged compact stars	
SUBHARTHI RAY, MANUEL MALHEIRO, JOSÉ P.S. LEMOS, VILSON T. ZANCHIN	1365

Third post Newtonian equation of motion for relativistic compact binaries	
YOSUKE ITOH	1368
• Spectral and timing appearances of the Galactic and extragalactic Black Holes	
<i>Chairperson: Lev Titarchuk</i>	
Theoretical description of kHz QPOs in accreting LMXB	
BANIBRATA MUKHOPADHYAY, SUBHARTHI RAY, JISHNU DEY, MIRA DEY	1371
Production of superluminal ejections from galactic black holes by violent magnetic reconnection	
ELISABETE M. DE GOUVEIA DAL PINO	1374
QPOs from radial and vertical oscillation of shocks in advective accretion flows	
SANDIP K. CHAKRABARTI, K. ACHARYYA, D. MOLTENI	1377
Spectral signature of advective accretion flows	
SILVIA ZANE	1381
• Radiative Transfer in Relativistic Astrophysics	
<i>Chairperson: Roberto Turolla and Silvia Zane</i>	
Photoabsorption of gamma rays in astrophysical jets	
CHARLES D. DERMER	1384
Conservative formulations of general relativistic radiative transfer	
CHRISTIAN Y. CARDALL	1388
Field channelled accretion flow in magnetic cataclysmic variables	
JOÃO BATISTA GARCIA CANALLE	1392
Atomic X-Ray spectra of accretion disk atmospheres in the Kerr metric	
MARIO A. JIMENEZ-GARATE, DUANE A. LIEDAH, CHRISTOPHER W. MAUCHE, JOHN C. RAYMOND	1396
The propagation of ionizing radiation in the early universe	
RAINER WEHRSE, DAYAL T. WICKRAMASINGHE	1400
Radiative transfer in a dusty medium	
ROSALBA PERNÀ	1400
Spectral properties of a two component and two temperature advective flow	
SAMIR MANDAL, SANDIP K. CHAKRABARTI	1403
Spectral signatures of winds from accretion disks around black	

xxx

holes

SANDIP K. CHAKRABARTI, A. NANDI, A.R. RAO 1407

Broad red-shifted lines as a signature of outflows

LEV TITARCHUCK, DEMOS KAZANAS, PETER BECKER 1411

• Alternative Theories (A)*Chairperson: Leopold Halpern*Riemann-Cartan-Weyl geometries, quantum motions and random
symplectic structures

DIEGO L. RAPOPORT 1415

An AdS-invariant theory of gravity in any dimension

EDUARDO RODRGUEZ 1418

Gravitational theory related to simple invariance groups

LEOPOLD HALPERN 1421

A fine quantum mechanism of classical gravity

MICHAEL A. IVANOV 1425

Nonlinear supersymmetric structure of spacetime and matter

MOTOMU TSUDA 1428

Path deviation equations in AP-geometry

M.I. WANAS, M.E. KAHIL 1431

• Alternative Theories (B)*Chairperson: Richard Hammond*

Complete description of tests of special relativity

CLAUS LÄMMERZAHL, HOLGER MÜLLER, CLAUS BRAXMAIER,
SVEN HERRMANN, ACHIM PETERS 1437

Extreme particle motion

RICHARD HAMMOND 1440

Lorentz violation in electrodynamics: a velocity gauge transformation alternative

ROBERTO ASSUMPÇÃO 1443

• Multidimensional Gravitational Theories (MGT)*Chairperson: Alexander Zhuk*

QED coupling from a 5-D Kaluza-Klein theory

ANDREA MARROCCO, GIOVANNI MONTANI 1446

Anomalous acceleration and five-dimensional space-times

CARLOS ROMERO, FÁBIO DAHIA 1449

Conformally invariant brane-universe and the cosmological con-

stant	
EDUARDO GUENDELMAN, EURO SPALLUCCI	1452
Dimensionality in quantum cosmology	
ZHONG CHAO WU	1455
• Metric Affine Gravitational Theories in 4-Dimensions	
<i>Chairperson: J. G. Pereira</i>	
Non-Abelian teleparallelism as an extended gauge theory: a geometrical view	
ANA LÚCIA BARBOSA, VANESSA CARVALHO DE ANDRADE	1459
Scalar field and nonsingular cosmology within gauge theories of gravity	
GREGORY VERESHCHAGIN	1462
Quasilocal center-of-mass for teleparallel gravity	
JAMES M. NESTER	1465
Affine theories, the metric, and matter fields	
JORGE L. CERVANTES-COTA	1477
On source coupling and the teleparallel equivalent to GR	
LAU LOI SO, JAMES M. NESTER	1480
A global formulation for gravitation	
RUBEN ALDROVANDI, JOSE GERALDO PEREIRA, K.H. VU	1483
Doing without the Equivalence Principle	
RUBEN ALDROVANDI	1487
• Black Holes from High Energy Collisions	
<i>Chairperson: S. Thomas</i>	
Detecting TeV black holes from extensive air showers	
EUN-JOO AHN	1495
Black hole formation in the grazing collision of high-energy particles	
HIROTAKA YOSHINO	1498
Rotating black holes/rings at future colliders	
KIN-YA ODA	1504
Characteristics of cosmic ray showers mediated by black holes	
LUIS A. ANCHORDOQUI, JONATHAN L. FENG, HAIM GOLDBERG, ALFRED D. SHAPERE	1513
• Perturbations of Collapsed Configurations	
<i>Chairperson: Zoltán Perjés</i>	
Perturbations and gravitomagnetism in the Kerr-Taub-NUT	

spacetime

DONATO BINI, CHRISTIAN CHERUBINI, ROBERT T. JANTZEN, BAHRAM MASHHOON	1516
---	------

Testing the dS/CFT correspondence from the perturbations in de Sitter spacetimes	
---	--

ELCIO ABDALLA, BIN WANG	1526
-----------------------------------	------

Principal null directions in perturbed black holes	
--	--

ZOLTAN PERJES	1536
-------------------------	------

• Analog Models of General Relativity

Chairperson: Santiago E. Perez Bergliaffa

Slow light as a black hole analogue?	
--------------------------------------	--

RALF SCHUETZHOLD	1544
----------------------------	------

Electromagnetic light rays in local dielectrics	
---	--

VITORIO A. DE LORENCI, RENATO KLIPPERT	1547
--	------

On optical black holes in moving dielectrics	
--	--

VITORIO A. DE LORENCI, RENATO KLIPPERT, YURI N.	
---	--

OBUKHOV	1550
-------------------	------

• Black Hole Thermodynamics

Chairperson: J. Zanelli

On Hawking radiation of extreme Reissner-Nordström black holes	
--	--

GLAUBER TADAIKESKY MARQUES	1553
--------------------------------------	------

Entanglement thermodynamics of the Unruh effect in curved spacetime	
--	--

JOSE ROBEL ARENAS-SALAZAR, JUAN MANUEL	
--	--

TEJEIRO SARMIENTO	1558
-----------------------------	------

Energy conservation and Hawking radiation	
---	--

MAULIK PARIKH	1561
-------------------------	------

• Cosmic microwave background radiation and observational cosmology

Chairperson: Alejandro Gangui

Recovering of the initial power spectrum at small	
---	--

MAREK DEMIANSKI	1567
---------------------------	------

Results from the Archeops 2002 artcic flight	
--	--

OLIVER PERDEREAU	1570
----------------------------	------

Domain of validity of the evolution of perturbations in Newtonian cosmology with pressure	
--	--

ROBAMAR REIS	1573
------------------------	------

A universe with a positive curvature	
--------------------------------------	--

ROLAND TRIAY	1576
------------------------	------

PART C**PARALLEL SESSIONS****• Numerical Relativity, Black Hole Collisions, and Algebraic Computation***Chairperson: Sascha Husa*

Numerical simulation of general relativistic stellar collapse	
CRISTIÁN RICARDO GHEZZI, PATRICIO S. LETELIER	1581
Testing binary black hole codes using cosmological spacetimes	
DAVID GARRISON	1584
The smoothness of null infinity: its relevance for numerical relativity	
JUAN ANTONIO VALIENTE KROON	1587
Collapse of a differentially rotating supermassive star	
MOTOYUKI SAIJO	1590
Analysing curved spacetimes with tensor splats	
WERNER BENGER, HANS-CHRISTIAN HEGE	1593

• Gravitational Lenses*Chairperson: Philippe Jetzer*

On the mass of the gravitational lenses in LMC	
LUIGI MANCINI, SEBASTIANO CALCHI NOVATI, PHILIPPE JETZER, GAETANO SCARPETTA	1599
Uncovering stellar atmospheres with gravitational microlensing telescopes	
MARTIN DOMINIK	1602
Uncovering galactic and extragalactic planets by gravitational microlensing	
MARTIN DOMINIK	1605
Gravitational lensing by spinning deflectors	
MAURO SERENO	1608
Black Hole Gravitational Lensing in the Strong Field Limit	
VALERIO BOZZA	1611

• Variable "Constants" of Nature*Chairperson: H.Sandvik*

Constraints on the Variations of Fundamental Constants	
KEITH OLIVE	1614

• Galaxies and the Large-Scale Structure

Chairperson: Ravi Sheth

- Large-scale Structure at High Redshift
RUPERT CROFT 1617

• Topology of the Universe*Chairperson: Marek Demianski*

- A note on the robustness of pair separation methods in cosmic topology
ARMANDO BERNUI, G.I. GOMERO, BRUNO C.C. MOTA,
MARCELO J. REBOUÇAS 1620
- The topology of the Universe via astronomical data
ARMANDO BERNUI 1624
- Consequences of observational uncertainties on the detection of cosmic topology
BRUNO C.C. MOTA, MARCELO J. REBOUÇAS, REZA TAVAKOL 1627
- Casimir Effect in Compact Universes
DANIEL MULLER 1631
- Superstring compactification as a common foundation for large scale structure and micro-structure
JOSEPH TOWE 1646

• Brane-world cosmology*Chairperson: R. Maartens*

- Brane dynamics in a 6D model
BERTHA CUADROS-MELGAR 1649
- Constraints in brane-world
EDMUNDO M. MONTE 1659
- Geometry, EFE's and foundations for brane cosmology
EDWARD ANDERSON 1662
- Cosmological limits on brane-world disappearing dark matter
GRANT J. MATHEWS, PETER GARNAVICH, KIYOTOMO ICHIKI,
TOSHITAKA KAJINO, MASANOBU YAHIRO 1665
- Compatible dynamics for brane-worlds in flat bulks
M.D. MAIA 1668
- FRW braneworlds: aspects of localization of gravity
PARAMPREET SINGH, NARESH DADHICH 1671
- Fine-tuning for the six dimensional hyperstring
PETER PATRICK, RINGEVAL CHRISTOPHE, UZAN JEAN-PHILIPPE 1674
- Cosmology on a brane-induced gravity with dilaton and trace

anomaly	
TAKASHI TORII, KEI-ICHI MAEDA, SHUNTARO MIZUNO	1680
A brane model, its Ads-DS states and their agitated extra dimensions	
UWE GUENTHER, PAULO R.L. VARGAS MONIZ, ALEXANDER ZHUK	1682
• Models of the Early Universe and CMB Anisotropies	
<i>Chairperson: Ruth Durrer</i>	
Scalar perturbations in α' -regularised pre-big bang models	
CYRIL CARTIER	1685
Perturbations propagation in a bouncing universe	
DIEGO ALVARO GONZALEZ, PATRICK PETER, NELSON PINTO-NETO	1688
Testing and comparing tachyon inflation to single standard field inflation	
FILIPPO VERNIZZI, DANIELE STEER	1692
Propagating cosmological perturbations in a bouncing universe	
PATRICK PETER, JEROME MARTIN	1697
An isotropization mechanism in a Bianchi I cosmology	
R. TRIAY, H.H. FLICHE, MÁRIO NOVELLO, L.R. DE FREITAS	1700
Testing the paradigm of adiabaticity	
ROBERTO TROTTA, RUTH DURRER	1703
CMB anisotropies through axion decay in Pre-Big Bang models	
VALERIO BOZZA, MAURIZIO GASPERINI, MASSIMO GIOVANNINI, GABRIELE VENEZIANO	1708
• Inhomogeneous Cosmology	
<i>Chairperson: Andrzej Krasinski</i>	
Generalisations of the Einstein-Straus model to cylindrically symmetric settings	
FILIPE C. MENA, REZA TAVAKOL, RAUL VERA	1711
Pre-inflationary perturbations spectrum	
GIOVANNI IMPONENTE, GIOVANNI MONTANI	1714
Fundamental gravitational entropy constraints as source of global cosmic inhomogeneity scales	
MANFRED LEUBNER	1717
• Nonsingular Cosmology - Inflation	
<i>Chairperson: Mário Novello</i>	
Inverse slow-roll problem: A Monte Carlo approach	
ENRIQUE DIAZ-HERRERA, ALFREDO MACIAS	1720

Non-singular stiff fluids	
LEONARDO FERNÁNDEZ-JAMBRINA, LUIS MANUEL GONZÁLEZ-ROMERO	1723
Minimal embeddings of the spacetime	
SERGEY CHERVON, CARLOS ROMERO, FÁBIO DAHIA	1726
Cosmic coincidence with a new type of dark matter	
EDUARDO GUENDELMAN, ALEXANDER KAGANOVICH	1729
Solving two puzzles in one go: quintessence from decaying dark matter	
HOURI ZIAEPOUR	1732
CMBR constraints on the generalized Chaplygin gas model	
MARIA C. BENTO, ORFEU BERTOLAMI, ANJAN A. SEN	1735
Observational constraints on flat Chaplygin quartessence models	
MARTIN MAKLER, S.Q. DE OLIVEIRA, I. WAGA	1738
Is the Universe really accelerating	
MAREK DEMIANSKI	1742
Decaying Lambda cosmology with varying G	
SAULO CARNEIRO	1745
WMAP constraints on a quintessence model	
TIAGO BARREIRO, MARIA C. BENTO, NUNO M.C. SANTOS, ANJAN A. SEN	1748
de Sitter Physics	
UGO MOSCHELLA	1751
Interacting quintessence and the coincidence problem	
WINFRIED ZIMDAHL, DIEGO PAVON, LUIS P. CHIMENTO, ALEJANDRO S. JAKUBI	1754
• Inner Engine: Symmetries and Spectra of GRBs	
<i>Chairperson: Pascal Chardonnet</i>	
Magnetic fields in GRB progenitors	
FEDERICO MATTEI, REMO RUFFINI, LUCA VITAGLIANO	1757
Relativistic induced compression of neutron stars and white dwarfs	
GRANT J. MATHEWS, JAMES R. WILSON	1760
Electron-positron-photon plasma around a collapsing star	
REMO RUFFINI, LUCA VITAGLIANO, SHE-SHENG XUE	1763
On the dynamical formation of the dyadosphere	
REMO RUFFINI, LUCA VITAGLIANO, SHE-SHENG XUE	1769
• The Collapsar and Supernova Models	

Chairperson: Charles Dermer

- A model for the inner engine of gamma ray bursts
GERMÁN LUGONES, JORGE ERNESTO HORVATH, ELISABETE M.
DE GOUVEIA DAL PINO, CRISTIÁN RICARDO GHEZZI 1777

• Global Structure, Singularities and Cosmic Censorship

Chairperson: J. A. Valiente Kroon

- Definition and classification of singularities in GR: classical and
quantum
DEBORAH A. KONKOWSKI, THOMAS M. HELLIWELL 1780
New self-similar solution to the scalar field collapse in four-
dimensions
GIL DE OLIVEIRA NETO, FLAVIO IASSUO TAKAKURA 1783
Dimensionality, self-similarity, and critical collapse
JAIME FERNANDO VILLAS DA ROCHA, ANZHONG WANG 1786
A new class of obstructions to the smoothness of null infinity
JUAN ANTONIO VALIENTE KROON 1789
Naked singularities in the gravitational collapse of null radiation
and a string fluid
KESHLAN GOVINDER, MEGAN GOVENDER 1792

- On the global existence problems in Gowdy symmetric spacetimes
with type IIB stringy matter
MAKOTO NARITA 1795

• Chaos in General Relativity and Cosmology

Chairperson: V. Gurzadyan

- Stochastic stabilization of the cosmic microwave background
radiation
CARL P. DETTMANN, JON P. KEATING, SANDRA D. PRADO 1798
Mixmaster chaos via the invariant measure
GIOVANNI IMPONENTE, GIOVANNI MONTANI 1801
Covariant Lyapunov exponents for the Mixmaster
GIOVANNI IMPONENTE, GIOVANNI MONTANI 1804
Chaos and universality in the dynamics of inflationary cosmologies
H.P. DE OLIVEIRA, IVANO DAMIÃO SOARES, E.V. TONINI 1807
On the role of the entangled states in the properties of cosmic
microwave background radiation
H. KULOGHIAN 1810
Nonlinear decay of the inflaton, turbulence and thermalization
HENRIQUE PEREIRA DE OLIVEIRA, IVANO DAMIÃO SOARES 1812

Nonlinear resonance of KAM tori in inflationary cosmologies N.A. LEMOS, G.A. MONERAT, H.P. DE OLIVEIRA, IVANO DAMIÃO SOARES, E.V. TONINI	1815
Noise and dissipation during preheating SERGIO E. JORÁS, RUDNEI O. RAMOS	1818
Chaos in FRW universe: an imaginary approach SERGIO E. JORÁS, TEREZINHA J. STUCHI	1821
Chaos of Yang-Mills field in Bianchi spacetimes YOSHIDA JIN	1824
• Einstein-Maxwell Systems	
<i>Chairperson: C. H. Lee</i>	
Electrovacuum static relativistic thin disks with nonzero radial pressure GONZALO GARCÍA R., GUILLERMO A. GONZÁLEZ	1827
• Inertial Forces, Rotation, Complex and Twistor Methods in General Relativity	
<i>Chairperson: D. Bini</i>	
Gravitomagnetic measurement of the angular momentum of celestial bodies ANGELO TARTAGLIA, MATTEO LUCA RUGGIERO	1830
Inertial forces in relativity DONATO BINI, ROBERT T. JANTZEN	1833
Action principle formulation for motion of extended bodies in General Relativity JEEVA ANANDAN, NARESH DADHICH, PARAMPREET SINGH	1836
Vorticity and kinks TINA HARRIOTT, J.G. WILLIAMS	1839
• Wormholes, Energy Conditions and Time Machines	
<i>Chairperson: T. Roman</i>	
Comments on the allowed spatial distributions of negative energy L.H. FORD, ADAM D. HELFER, THOMAS A. ROMAN	1842
Temperature of wormhole with exotic matter SOON-TAE HONG, SUNG-WON KIM	1845
Some thoughts on energy conditions and wormholes THOMAS A. ROMAN	1848
• Exact Solutions (mathematical aspects)	
<i>Chairperson: Alberto Garcia</i>	

What does a dynamical magnetic monopole do?	
ISTVÁN RÁCZ	1862
New Euclidean method of generating stationary vacuum Einstein fields	
Ts. GUTSUNAEV, A.A. SHAIDEMAN	1865
Gauge fields and particle-like formations associated with shear-free congruences	
VLADIMIR KASSANDROV, VLADIMIR TRISHIN	1868
• Exact Solutions (physical aspects)	
<i>Chairperson: Susan Scott</i>	
Scalar and spinor perturbation to the most generalised Kerr-NUT space-time	
BANIBRATA MUKHOPADHYAY, NARESH DADHICH	1872
Conformally flat stationary cyclic symmetric spacetimes	
CUAUHTEMOC CAMPUZANO	1875
"Singularity" of Levi-Civita spacetimes	
DEBORAH A. KONKOWSKI, THOMAS M. HELLIWELL, CHRISTOPHER WIELAND	1878
Kerr-Newman solution and spin 1/2	
HCTOR IVÁN ARCOS VELASCO, JOSE GERALDO PEREIRA	1881
Kinematic self-similar solutions and their properties	
HIDEKI MAEDA, TOMOHIRO HARADA, HIDEO IGUCHI, NAOYA OKUYAMA	1884
The Newtonian limit of spacetimes descrinig uniformly accelerated particles	
JUAN ANTONIO VALIENTE KROON	1887
Rotating cosmological models of Bianchi type V	
MICHAEL BRADLEY, DANIEL ERIKSSON	1890
False vacuum lumps with the fermionic core	
YUTAKA HOSOTANI, RAMIN G. DAGHIGH	1893
• Resonant Detectors of Gravitational Waves: Bars and Spheres	
<i>Chairperson: Odylio Aguiar</i>	
The Brazilian Spherical Detector: Status Report	
O.D. AGUIAR, L.A. ANDRADE, J.J. BARROSO, L. CAMARGO FILHO, L.A. CARNEIRO, C.S. CASTRO, P. CASTRO, CÉSAR A. COSTA, K. COSTA, J.C.N. DE ARAUJO, A.U. DE LUCENA, W. DE PAULA, E.C. DE REY NETO, S.T. DE SOUZA, A.C. FAUTH	1896

EXPLORER and NAUTILUS: present status ALESSIO ROCCHI	1900
A mathematical model for the quadrupolar oscillations of the Brazilian gravitational wave detector CÉSAR A. COSTA, O.D. AGUIAR, NADJA S. MAGALHÃES	1910
Can black hole MACHO binaries be detected by the Brazilian Spherical Antenna ? J.C.N. DE ARAUJO, OSWALDO DUARTE MIRANDA, C.S. CASTRO , B.W. PALEO, O.D. AGUIAR	1913
The vibration isolation design for the transducers cabling of the Schenberg Detector JOSÉ MELO	1916
Superconductor reentrant cavities for the parametric transducers of the Brazilian Mario Schenberg gravitational wave detector KILDER RIBEIRO	1926
Distribution of the energy of cosmic ray particles in the modes of a spherical gravitational wave antenna RUBENS MARINHO	1930
• Gravitational Wave Laser Interferometry	
<i>Chairperson: David Blair</i>	
Quantum locking of mirrors in interferometric measurements ANTOINE HEIDMANN, JEAN-MICHEL COURTY, MICHEL PINARD	1933
Gravity gradients in LIGO: a proposal for data analysis DAVID GARRISON, GABRIELA GONZÁLEZ	1936
Thermal noise from optical coatings GREGORY HARRY, DAVID CROOKS, GIANPIETRO CAGNOLI, JIM HOUGH, SHEILA ROWAN, PETER SNEDDON, MARTIN FEJER, ANDRI GRETARSSON, NORIO NAKAGAWA, STEVE PENN	1939
4-mass torsion pendulum for ground testing of LISA displacement sensors L. CARBONE, A. CAVALLERI, R. DOLESI, C.D. HOYLE, M. HUELLER, S. VITALE, W.J. WEBER	1942
Research and development for large-scale cryogenic gravitational wave telescope (LCGT) NORIKATSU MIO AND THE LCGT COLLABORATION	1946
Charging of the LISA test masses: sources, consequences and management PETER J. WASS	1949

• Gravitational Wave Data Analysis*Chairperson: Fulvio Ricci*

Response of the Mario Schenberg gravitational wave detector to signals from a black hole ringdown

CÉSAR A. COSTA 1952

Resolving signals in the LISA data

MASSIMO TINTO, ANDRZEJ KROLAK 1955

Gravitational-wave data analysis from earth to space: computational and theoretical challenges

MICHELE VALLISNERI 1958

Can a background of gravitational waves constrain the star formation history of the universe?

OSWALDO DUARTE MIRANDA, J.C.N. DE ARAUJO, O.D. AGUIAR 1961

• Einstein Theories: Historical Perspective*Chairperson: J. Eisenstaedt*

Precessions in general relativity

COSTANTINO SIGISMONDI 1964

Correlation of maxima in long-period variable stars: from Eddington to present time

COSTANTINO SIGISMONDI 1969

Kaluza's and Klein's Contributions to the Kaluza-Klein-Theory

DANIELA WUENSCH, HUBERT GOENNER 1972

• Strong gravity and Gravitational Waves*Chairperson: Gilles Esposito-Farese*

Gravitational wave emission from a bounded source: the nonlinear regime

HENRIQUE PEREIRA DE OLIVEIRA, IVANO DAMIÃO SOARES 1979

• Precision Gravity Measurements*Chairperson: Claus Laemmerzahl*

Inverse-square-law test - Preliminary results of Ljubljana experiment

JURIJ KOTAR, ANDREJ CADEZ 1982

• General relativity in space and sensitive tests of the equivalence principle*Chairperson: Claus Laemmerzahl*

The theory of a free-fall equivalence-principle experiment

BENJAMIN LANGE 1985

Testing the universality of free fall for charged particles under

microgravity conditions CLAUS LÄMMERZAHL	1988
On the possibility of measuring the Lense-Thirring effect with a LAGEOS-LAGEOS II-OPTIS mission LORENZO IORIO	1991
An alternative view of the fine structure constant and its variation: bringing the flux quanta into the definition of the electron MICHEL E. TOBAR	1994
Investigation of the gyro suspension torques on the NASA-Stanford Gravity Probe B (GP-B) Relativity Mission YOSHIMI OHSHIMA	1997
• Quantum Gravity Phenomenology	
<i>Chairperson: Giovanni Amelino-Camelia</i>	
Lorentz invariance: present experimental status CLAUS LÄMMERZAHL	2002
Deformations of the Schwarzschild black hole DANIEL GRUMILLER	2012
Matter-antimatter asymmetry generated by loop quantum gravity GAETANO LAMBIASE, PARAMPREET SINGH	2018
Quantum stress tensor fluctuations and Raychaudhuri's equation J. BORGMAN, L.H. FORD	2021
Flat space modified particle dynamics induced by Loop Quantum Gravity LUIS F. URRUTIA	2024
Phenomenological implications for canonical noncommutative spacetime LUISA DOPPLICHER	2034
Nonperturbative gravitational events at the TeV scale MARCO CAVAGLIA	2037
Testing the fundamentals of physics using cryogenic microwave oscillators MICHEL E. TOBAR	2040
Conformal group with two observer independent scales NICOLA ROSSANO BRUNO	2043
Translational invariance and noncommutative field theories ORFEU BERTOLAMI	2046
Phenomenology of space-time fluctuations ROBERTO ALOISIO, PASQUALE BLASI, ANGELO GALANTE,	

AURELIO F. GRILLO	2057
Quantum foam	
Y. JACK NG	2069
• Quantum Fields	
<i>Chairperson: Volodia Belinski</i>	
Topological gravity, Kaluza-Klein reduction, and the kink	
ALFREDO IORIO	2081
Are classically singular spacetimes quantum-mechanically singular as well?	
DEBORAH A. KONKOWSKI, THOMAS M. HELLIWELL, V. ARNDT	2085
Generalised zeta-function regularization for scalar one-loop effec- tive action	
GUIDO COGNOLA, SERGIO ZERBINI	2088
Absorption cross sections of low energy photons for the Schwarzschild and extreme Reissner-Nordström black holes in arbitrary dimensions	
Luís C.B. CRISPINO, ATSUSHI HIGUCHI, GEORGE E.A. MATSAS	2092
Yang-Mills theories using only extended fields (vectorial and scalar) as gauge fields	
MAX CHAVES	2095
Confined Quantum Field Theory	
MOHAMMAD FASSIHI	2101
Einstein anomalies in higher dimensional Riemann-Cartan space	
SATOSHI YAJIMA, YOJI HIGASIDA, SHIN-ICHIRO KUBOTA, YUKI KAMO, SHOSHI TOKUO	2110
Particle creation by naked singularity in self-similar collapse	
UMPEI MIYAMOTO, TOMOHIRO HARADA	2113
Chronology protection around a spinning cosmic string	
VITORIO A. DE LORENCI, EDISOM S. MOREIRA, JR.	2116
Some quantum effects in the spacetimes of topological defects	
VALDIR B. BEZERRA, GEUSA DE A. MARQUES	2118
Vacuum fluctuations around a dispiration	
VITORIO A. DE LORENCI, EDISOM S. MOREIRA, JR.	2121
Semiclassical spacetime of a cosmic dispiration	
VITORIO A. DE LORENCI, RENATO KLIPPERT, EDISOM S. MOREIRA, JR.	2124
• New developments and the time issue in quantum gravity	
<i>Chairperson: Jerzy Kowalski-Glikman</i>	

The 3-space approach to Relativity EDWARD ANDERSON	2127
The three perspectives on the quantum-gravity problem and their implications for the fate of Lorentz symmetry GIOVANNI AMELINO-CAMELIA	2130
On the frame fixing in quantum gravity SIMONE MERCURI, GIOVANNI MONTANI	2133
• Casimir effect and short-range gravity	
<i>Chairperson: Vladimir Mostepanenko</i>	
Forms on vector bundles over three-dimensional hyperbolic spaces and black-hole geometry ANDREY BYTSENKO, M.E.X. GUIMARAES, J.A. HELAYEL-NETO	2136
Entropy bounds for a massive scalar field in positive curvature space EMÍLIO ELIZALDE, ALEXANDRE C. TORT	2139
On the two-loop Casimir effect FABRICIO A. BARONE, RICARDO M. CAVALCANTI, CARLOS FARINA	2148
Constraints on corrections to Newtonian law of gravitation from the measurements of the lateral Casimir force GALINA KLIMCHITSKAYA	2151
Measurement of the Casimir force between parallel metallic surfaces GIUSEPPE RUOSO	2154
A proposal for the measurement of the non-stationary Casimir effect GIUSEPPE RUOSO	2157
Vacuum pressures in a strong magnetic field and Casimir force H. PEREZ ROJAS, E. RODRIGUEZ QUERTS	2160
Marginally stable topologically non-trivial solitons in the Gross- Neveu model JOSHUA FEINBERG	2166
Enhanced vacuum fluctuations near the focus of a parabolic mirror L.H. FORD, N.F. SVAITER	2170
Quasi-oscillatory Casimir forces L.H. FORD, V. SOPOVA	2173
Casimir energy and photon creation in κ -deformed quantum	

electromagnetism	
M.V. COUGO-PINTO, CARLOS FARINA, J.F.M. MENDES	2176
The Casimir force between rough metallic plates	
PAULO A. MAIA NETO, CYRIAQUE GENET, ASTRID LAM-BRECHT, SERGE REYNAUD	2179
Casimir energy and inertia	
PAULO A. MAIA NETO, LUIS ANDRE MACHADO	2182
Is the cosmological constant a problem?	
ROLAND TRIAY	2185
• Loop quantum gravity, quantum geometry, spin foams	
<i>Chairperson: Robert Oeckl</i>	
Short-distance cutoffs in curved space	
ACHIM KEMPF	2188
Some encouraging and some cautionary remarks on Doubly Special Relativity in Quantum Gravity	
GIOVANNI AMELINO-CAMELIA	2193
Quantum holonomies in (2+1)-dimensional gravity	
JEANETTE E. NELSON, ROGER F. PICKEN	2198
The Pauli exclusion principle, spin, and statistics in loop quantum gravity: SU(2) versus SO(3)	
JOHN SWAIN	2203
Towards Regge calculus on 3 dimensional manifolds with boundary	
MATYAS KARADI	2208
Renormalization for spin foam models of quantum gravity	
ROBERT OECKL	2213
Discrete geometry in loop quantum gravity and the Lorentz contraction	
SIMONE SPEZIALE	2218
• Quantum cosmology and quantum effects in the early Universe	
<i>Chairperson: Paulo Moniz</i>	
Ashtekar-Wheeler-DeWitt equation and inflationary scenario	
CHOPIN SOO	2221
Quantum cosmology and the accelerated Universe	
EDUARDO SERGIO SANTINI	2224
Noncommutative scalar-tensor cosmology	
LUIS O. PIMENTEL	2228

Green function for topology change NELSON PINTO-NETO, JEROME MARTIN, IVANO DAMIÃO SOARES	2231
• Fundamental Issues in Quantum Theory	
<i>Chairperson: Paulo Moniz</i>	
Decoherence due to fluctuating electromagnetic fields L.H. FORD, J.-T. HSIEH	2234
Functional approach to (2+1)-dimensional gravity LUIGI CANTINI, PIETRO MENOTTI	2237
How a deBroglie Bohm formulation of FRW cosmology induces large extra dimensions features PAULO R.L. VARGAS MONIZ, J. MAROTO	2240
• Covariant Quantization	
<i>Chairperson: N. Berkovitz</i>	
Aspects of M5-brane dynamics DAVID BERMAN	2243
Perturbative approaches to quantum gravity and strings DAVID DUNBAR	2251
De Sitter space with finitely many states: a toy story MAULIK PARikh	2254
• AdS/CFT	
<i>Chairperson: N. Braga</i>	
Closed causal curves in string theory CARLOS HERDEIRO	2260
Higher dimensional black holes and AdS/CFT conjecture JORMA LOUKO, JACEK WISNIEWSKI	2263
• Braneworlds and cosmology	
<i>Chairperson: Massimo Bianchi and Ruth Durrer</i>	
Irreversible processes and cosmological models GILBERTO MEDEIROS KREMER	2266
Branons as dark matter J.A.R. CEMBRANOS, A. DOBADO, A.L. MAROTO	2269
Regular cosmological solutions in effective action from string theories with moduli fields J.C. FABRIS, R.G. FURTADO	2272
Branons as dark matter J.A.R. CEMBRANOS, A. DOBADO, A.L. MAROTO	2276

• M-theory and dualities*Chairperson: A. Dabholkar*

An abelian cohomological theory of Hodge type	
BODO GEYER, DIETMAR MÜLSCH	2279

Δ -String: a hybrid between Einstein's and String paradigms	
VLADIMIR DZHUNUSHALIEV, HANS-JUERGEN SCHMIDT	2282

• Self-Gravitating Systems 1*Chairperson: E. Mielke*

Density wave theory of Galactic spiral arms	
BURKHARD FUCHS	2285

NFW galactic profiles in the Newtonian limit of scalar-tensor theories	
M.A. RODRIGUEZ-MEZA, JORGE L. CERVANTES-COTA	2288

Gravitating self-dual cylindrical solutions in gauged sigma models	
YOSEF VERBIN, S. MADSEN, A.L. LARSEN	2291

• Self-Gravitating Systems 2*Chairperson: Simonetta Filippi*

Rotating boson and boson-fermion stars	
CLAUDIO M.G. DE SOUSA	2295

Interacting geodesics: binary systems around a black hole	
EDUARDO GUÉRON, PATRICIO S. LETELIER	2301

Functional analysis in self-gravitating and rotating systems	
HECTOR ALONSO SEPULVEDA, SIMONETTA FILIPPI	2305

Relation between dynamic and thermodynamic stability of relativistic stellar clusters with cutoff and gas spheres in a spherical box	
MARCO MERAFINA, GENNADY S. BISNOVATYI-KOGAN	2310

Self-gravitating systems with rotation and vorticity	
SIMONETTA FILIPPI	2314

General relativistic polytropes with a repulsive cosmological constant	
STANISLAV HLEDÍK, ZDENĚK STUCHLIK	2322

• Astrophysics and Cosmology with Future Ground-Based Gamma Ray Telescopes*Chairperson: Felix Aharonian*

Unidentified EGRET sources	
GUSTAVO E. ROMERO	2325

Relativistic electrons & magnetic fields in clusters of galaxies YOEL REPHAEILI	2328
• Frontiers in Cosmic Rays	
<i>Chairperson: L. Anchordoqui</i>	
The emission of ultra-high energy cosmic rays from electromagnetic black holes ALVISE MATTEI, PASCAL CHARDONNET, REMO RUFFINI, SHE- SHENG XUE, LUCA VITAGLIANO, CARLO L. BIANCO, FEDERICO FRASCHETTI	2331
The Lamb shift and ultra-high-energy cosmic rays SHE-SHENG XUE	2336
• The first stars and GRBs at high redshifts	
<i>Chairperson: George Djorgovski</i>	
Inferences on the ISM structure around GRB980425 and GRB 980425 - SN1998bw association in the EMBH model FEDERICO FRASCHETTI, M.G. BERNARDINI, CARLO L. BIANCO, REMO RUFFINI, SHE-SHENG XUE, PASCAL CHARDONNET	2342
General features of GRB 030329 in the EMBH model M.G. BERNARDINI, CARLO L. BIANCO, REMO RUFFINI, SHE- SHENG XUE, PASCAL CHARDONNET, FEDERICO FRASCHETTI	2350
GRB 970228 and its associated supernova within the EMBH model REMO RUFFINI, M.G. BERNARDINI, CARLO L. BIANCO, A. CORSI, SHE-SHENG XUE, PASCAL CHARDONNET, FEDERICO FRASCHETTI	2356
• The early quasars and their cosmological uses	
<i>Chairperson: George Djorgovski</i>	
Swift: the Next-Generation Gamma-Ray Burst Mission THOMAS CLINE, NEIL GEHRELS, JAY NORRIS	2359
List of Participants	2362
Author Index	2372