

## The 21st workshop on General Relativity and Gravitation in Japan

Sakura Hall Katahira Campus Tohoku University, Sendai Japan

September 26 (Mon.) – 29 (Thur.), 2011

Invited talk: 45 min

Oral Presentation: 15min

(Including questions & discussion)

### Oral Presentations

#### Sep. 26 (Mon.)

##### Morning session Chair: Tetsuya Shiromizu (Kyoto Univ.)

10:40-10:40

Toshifumi Futamase (LOC Chair, Tohoku Univ.)

Opening address

10:40-11:25

Sumio Yamada (Tohoku Univ.)

*Riemannian geometric aspects of Penrose-type inequalities*

11:25-12:10

Mu-Tao Wang (Columbia Univ., USA)

*Quasilocal mass in general relativity*

#### 12:10-14:00 Poster exhibition at the 1st floor of the Sakura Hall and Lunch

##### Afternoon session (12 talks)

#### 14:00-15:00 Chair: Yasusada Nambu (Nagoya Univ.)

Kunihito Uzawa (Kinki Univ.)

Warped de Sitter compactifications

Cristián Martínez (CECS, Chile)

Exact solutions of Einstein gravity with a negative cosmological constant coupled to a massless scalar field in arbitrary spacetime dimensions

Teruaki Suyama (RESCEU, Univ. of Tokyo)

Black hole perturbation in parity violating gravitational theories

Sergey Pavluchenko (Special Astrophysical Observatory, Russia)

New features of black hole solutions in  $f(R)$ ;  $G$  theories

#### 15:00-15:20 COFFEE BREAK 20min

#### 15:20-16:20 Chair: Jiro Soda (Kyoto Univ.)

Keiki Saito (Sokendai)

The high frequency limit in  $f(R)$  gravity

Hayato Motohashi (RESCEU, Univ. of Tokyo)

The unification of inflation and dark energy in extended  $f(R)$  gravity

Ahmet Emir Gumrukcuoglu (IPMU, Univ. of Tokyo)

Nonlinear perturbations in the IR limit of Horava-Lifshitz gravity

Naoki Tsukamoto (Rikkyo Univ.)

There are no stationary axisymmetric star solutions in Horava-Lifshitz gravity

#### 16:20-16:40 COFFEE BREAK 20min.

#### 16:40-17:40 Chair: Takeshi Chiba (Nihon Univ.)

Seiju Ohashi (Kyoto Univ.)

Spherical collapse of inhomogeneous dust cloud in the Lovelock theory

Kent Yagi (Kyoto Univ.)

Binary Inspiral in Quadratic Gravity

Takayuki Suzuki (Yamaguchi Univ.)

N-body simulation of cosmic structure formation on the Moffat Gravity

Kazuharu Bamba (Nagoya Univ.)

Screening scenario for cosmological constant in de Sitter solutions; phantom-divide crossing and finite-time future singularities in non-local gravity

#### Sep. 27 (Tue.)

##### Morning session Chair: Masahiro Yamaguchi (Tohoku Univ.)

10:30-11:15

Shoji Asai (University of Tokyo)

*The latest results of LHC - Hint of Higgs and Dark matter*

11:15-12:00

Pau Figueras (University of Cambridge, UK)

*Braneworld black holes*

#### 12:00-13:30 Lunch

##### Afternoon session (9 talks)

#### 13:30-14:45 Chair: Ken-ichi Nakao (Osaka City Univ.)

Umpei Miyamoto (Rikkyo Univ.)

Astrophysical censorship

Soichiro Isoyama (YITP, Kyoto Univ.)

Cosmic censorship in overcharging a charged black hole with a charged particle

Tomohiro Harada (Rikkyo Univ.)

High-velocity collision of particles around a rapidly rotating black hole

Hiroataka Yoshino (KEK)

Bosenova collapse of axion cloud around a rotating black hole

Ryo Saito (YITP, Kyoto Univ.)

Constraints on Particle Dark Matter Models by the Presence of Primordial Black Holes

#### 14:45-15:00 BREAK 15min

#### 15:00-16:00 Chair: Shijun Yoshida (Tohoku Univ.)

Kentarō Takami (Albert-Einstein-Institute, Potsdam, Germany)

A quasi-radial stability criterion for rotating relativistic stars.

Hajime Sotani (NAOJ)

Effect of Pasta Phase on Oscillations in Neutron Stars

Motoyuki Saijo (Rikkyo Univ.)

Dynamical Approaches for Secular Instabilities in Rotating Stars

Takashi Tamaki (Nihon Univ.)

What are universal features of gravitating Q-balls?

#### 16:00-17:30 Poster session at the 1st floor of the Sakura Hall

#### Sep. 28 (Wed.)

#### Morning session Chair: Takahiro Tanaka (Kyoto Univ.)

10:30-11:15

Eiichiro Komatsu (University of Texas at Austin, USA)

*Cosmology in the Next Decade*

11:15-12:00

Nicolás Yunes (Massachusetts Institute of Technology, USA)

*Gravitational Waves from Compact Binaries as Probes of the Universe*

#### 12:00-13:30 Lunch

#### Afternoon session (16 talks)

#### 13:30-14:45 Chair: Masaru Shibata (Kyoto Univ.)

Takuya Tsuchiya (Waseda Univ.)

Constraint propagation and constraint-damping for  $C^2$ -adjusted formulations

Yuichiro Sekiguchi (YITP, Kyoto Univ.)

Effects of hyperon in binary neutron star mergers

Kenta Hotokezaka (Kyoto Univ.)

Gravitational waves from binary neutron star mergers: measuring of the equation of state

Kenta Kiuchi (YITP, Kyoto Univ.)

Gravitational waves and neutrino emission from the merger of binary neutron stars

Ken'ichi Saikawa (ICRR, Tokyo Univ.)

Gravitational waves from cosmic string-domain wall networks

#### 14:45-14:55 BREAK 10min

#### 14:55-16:10 Chair: Jun'ichi Yokoyama (Univ. of Tokyo)

Maresuke Shiraishi (Nagoya Univ.)

Violation of the Rotational Invariance in the CMB Bispectrum

Daisuke Yamauchi (ICRR, Tokyo Univ.)

Weak lensing of CMB from cosmic (super-)strings

Satoshi Maeda (Kyoto Univ.)

Generation of the primordial magnetic fields from the non-adiabatic fluctuations

at the pre-recombination era

Kouji Nakamura (NAOJ)

Construction of gauge-invariant variables of linear metric perturbation on general background spacetime

Masaru Adachi (Hirosaki Univ.)

No Dark Energy is required if we accept a slightly inhomogeneous viewpoint

#### 16:10-16:40 COFFEE BREAK 30min.

#### 16:40-17:25 Chair: Hideki Ishihara (Osaka City Univ.)

Li-Ming Cao (Kink Univ.)

Deformation of Codimension-2 surfaces and Horizon thermodynamics

Shunichiro Kinoshita (Kyoto Univ.)

Hawking temperature for near-equilibrium black holes

Hiromi Saida (Dido Univ.)

Universal Property of Quantum Gravity implied Uniqueness Theorem of Bekenstein-Hawking Entropy

#### 17:25-17:35 BREAK 10min

#### 17:35-18:20 Chair: Kei-ichi Maeda (Waseda Univ.)

Mitsuhiro Matsumoto (Sokendai)

Time Evolution of Evaporating Black Rings

Masahiro Hotta (Tohoku Univ.)

Quantum Energy Teleportation and Black Hole

Shinya Tomizawa (KEK)

New solution generation utilizing  $SL(2;R)$ -duality and new black holes

## 18:30-20:30 Banquet at the 1st floor of the Sakura Hall

Sep. 29 (Thur.)

Morning session Chair: Misao Sasaki (Kyoto Univ.)

10:30-11:15

Marco Peloso (University of Minnesota, USA)

*Phenomenology of a pseudoscalar inflaton: naturally large nongaussianity*

11:15-12:00 (3 talks)

Kazuyuki Sugimura (YITP, Kyoto Univ.)

Multi-field open inflation and instanton

Tutomu Kobayashi (Kyoto Univ.)

Generalized G-inflation

Fuminiobu Takahashi (Tohoku Univ.)

Non-Gaussianity from Hilltop Curvaton

12:00-13:30 Lunch

Afternoon session (6 talk)

13:30-14:15 Chair: Masahide Yamaguchi (Tokyo Institute of Technology)

Atsushi Naruko (YITP, Kyoto Univ.)

Beyond delta N formalism

Yuichi Takamizu (Waseda Univ.)

Gradient expansion approach to multi-field inflation

Masato Nozawa (KEK)

Parity violation in graviton non-Gaussianity

14:15-14:25 BREAK 10min

14:25-15:25 Chair: Toshifumi Futamase (Tohoku Univ.)

Margarita Khabibullina (Kazan Federal Univ.)

The estimation of black-hole masses in distant radio galaxies

Yoshiaki Kato (NAOJ)

Exploring the Growth History of Massive Black Holes by Measuring the Spin of the Massive Black Hole Sagittarius A\*

Makoto Miyoshi (NAOJ)

Oscillation Phenomena in the Disk around the Massive Black Hole Sagittarius A\*

## Poster contributions

P01. Hideyoshi Arakida (Iwate Univ.)

Effect of cosmological constant on light deflection

P02. Takayuki Hikichi (Nagoya Univ.)

Numerical simulation of quantum gravity

P03. Koichi Hirano (Ichinoseki National College of Technology)

Constraining Galileon gravity from observational data with growth rate

P04. Takahisa Igata (Osaka City Univ.)

Stationary Closed Strings in 5d Minkowski Spacetime

P05. Koji Izumi (Hirosaki Univ.)

Perturbative solutions to the lens equation for multiple lens planes: With some numerical examples

P06. Nahomi Kan (Yamaguchi Junior College)

Equations of motion in Double Field Theory: from classical particles to quantum cosmology

P07. Masashi Kimura (YITP, Kyoto Univ.)

Analyticity of event horizons of extremal Kaluza-Klein black holes

P08. Takao Kitamura (Hirosaki Univ.)

Astrometric microlensing by the Ellis wormhole

P09. Koichiro Kobayashi (Yamaguchi Univ.)

Flux vacua in DBI type Einstein-Maxwell theory

P10. Yasufumi Kojima (Hiroshima Univ.)

Off-equatorial orbits of charged particles in strong gravity with magnetic dipole field

P11. Koutarou Kyutoku (Kyoto Univ.)

Extracting equation of state parameters from black hole-neutron star mergers

P12. Yosuke Misonoh (Waseda Univ.)

Oscillating Bianchi IX Universe in Horava-Lifshitz Gravity

P13. Yoshiyuki Morisawa (Osaka Univ. of Economics and Law)

Geometry and symmetry of target space of 5-dimensional Einstein-Maxwell-Chern-Simons theory with non-SUGRA coupling

P14. Daisuke Nitta (Nagoya Univ.)

Shadows of Colliding Black Holes

P15. Yuji Ohsumi (Nagoya Univ.)

Possibility of observing entanglement in primordial fluctuation

P16. Hiroki Okawara (Hirosaki Univ.)

Quantum interference in Chern-Simon gravity

P17. Ken-ichi Oohara (Niigata Univ.)

Effectiveness of Empirical Mode Decomposition in Search for Gravitational Wave Signals II

P18. Nobuyuki Sakai (Yamagata Univ.)

Cosmic microwave background anisotropy produced by network of nonlinear super-structures

P19. Yuuiti Sendouda (Hirosaki Univ.)

Ghostfree Lorentz-violating Weyl gravity

P20. Kiyoshi Shiraishi (Yamaguchi Univ.)

Einstein Universe under Deconstruction: the case with degenerate fermions

P21. Hideyuki Tagoshi (Osaka Univ.)

The cross-correlation search for a hot spot of gravitational waves

P22. Masaaki Takahashi (Aichi Univ. of Education)

Isothermal MHD Shocks in Accretion onto a Black Hole

P23. Tomohiro Takahashi (Kyoto Univ.)

Instability of Charged Lovelock Black Holes under Tensor Perturbations

P24. Kentaro Tanabe (YITP Kyoto Univ.)

Asymptotic rigidity of black holes

P25. Masaaki Watanabe (Kyoto Univ.)

The anisotropic inflation

P26. Kei Yamada (Hirosaki Univ.)

Three-body-interaction effects on the relativistic perihelion precession

P27. Yuta Yamada (Osaka Institute of Technology)

Gravitational Collapse of Ring Object in Five-dimensional Space-time

P28. Ying-li Zhang (YITP, Kyoto Univ.)

Screening the Cosmological Constant in non-local gravity