

# The 14th International Conference on Gravitation, Astrophysics and Cosmology (ICGAC14)

17 – 21 August 2020, National Central University, Jhongli, Taiwan

## Program

		17 August Monday	18 August Tuesday	19 August Wednesday	20 August Thursday	21 August Friday
	08:40-09:00	Opening				
1	09:00-09:30	Michael Landry	David Kubiznak	Vesselin Gueorguiev	Jong-Ping Hsu	Marcelo Rubio
2	09:30-10:00	Nobuyuki Kanda	Ling Jun Wang	Angel Rincon	Nikodem Poplawski	Robert Mann
3	10:00-10:30	Wei-Tou Ni	Bogeun Gwak	Y.Hao Y.Mikura	Sujoy Modak	Mitsutoshi Fujita
	10:30-10:50	Break				
4	10:50-11:20	Ziren Luo	Dong-han Yeom	Q.Li K.Nakashi	Naritaka Oshita	Jia-Rui Sun
5	11:20-11:50	Yi-Ming Hu	Shih-Yuin Lin	Y.Koga C.MacLaurin	Shun-Pei Miao	Vishnu Rajagopal
6	11:50-12:20	Eduard Larranaga	Shinji Mukohyama	K.Chandra Y.H.Khan	Yuichiro Tada	Chiranjeeb Singha
	12:20-13:00	Long Break				
7	13:00-13:30	Kei-ichi Maeda	Nobuyuki Sakai	Muhammad Sharif	Xun Xue	Homa Shababi
8	13:30-14:00	Hayato Motohashi	Shoichi Kawamoto	James Nester	Chopin Soo	Hiroyuki Takata
9	14:00-14:30	Xian Gao	Michael Good	Sinya Aoki	Hoi Lai Yu	Michael Ivanov
	14:30-14:50	Break				
10	14:50-15:20	Chan Park	Che-Yu Chen	Dmitry Gal'tsov	H.W.Chiang Y.H.Kung	Sung-Won Kim
11	15:20-15:50	Shaoqi Hou	Keiko Nagao	Sebastian Bahamonde	I.Bogush S.M.Lee	Gregory Vereshchagin
12	15:50-16:20	Dong-Hoon Kim	Naoya Kitajima	Konstantinos Dialektopoulos	J.Gais H.Y.Cheung	Xiaoyi Xie
	16:20-16:40	Break				
13	16:40-17:10	Shi Pi	Tetsutaro Higaki	Takafumi Kokubu	R.Sarwar A.Mangiagli	Sousuke Noda
14	17:10-17:40	Cosimo Bambi	Sungwook E Hong	Pradyumn Sahoo	R.Singh Z.B.Yao	Yun-Long Zhang
15	17:40-18:10	Ignazio Ciufolini	Goverdhan Khadekar	Jackson Levi Said	S.Yanai H.Chakrabarty	Remo Ruffini
16	18:10-18:40				J.Wang Y.Zhu	

## 17 August (Monday)

08:40 - 09:00 Opening

Section: **Gravitational Waves**

Chair: **Misao Sasaki**

09:00 - 09:30 (Los Angeles: 18:00, 16 Aug)

Michael Landry (LIGO Hanford Observatory/Caltech)

“Colliding black holes and neutron stars: latest results from LIGO and Virgo”

09:30 - 10:00 (Tokyo: 10:30)

Nobuyuki Kanda (Osaka City University)

“Status of KAGRA”

10:00 - 10:30 Wei-Tou Ni (National Tsing Hua University)

“Gravitational Wave Detection in Space: the Present Outlook”

10:30 - 10:50 Break

Chair: **Chiang-Mei Chen**

10:50 - 11:20 Ziren Luo (Chinese Academy of Sciences)

“A brief introduction to Taiji and Taiji-1 satellite”

11:20 - 11:50 Yi-Ming Hu (Sun Yat-sen University)

“Science with the TianQin observatory”

11:50 - 12:20 (Bogota: 22:50, 16 Aug)

Eduard Larranaga (Universidad Nacional de Colombia)

“Waveform produced by a particle coupled with a scalar field plunging into a static spherically symmetric black hole”

12:20 - 13:00 Long Break

Chair: **Wen-Yu Wen**

13:00 - 13:30 (Tokyo: 14:00)

Kei-ichi Maeda (Waseda University)

“Hierarchical Triplet System and Gravitational Waves”

13:30 - 14:00 (Tokyo: 14:30)

Hayato Motohashi (Kogakuin University)

“Primordial black holes from canonical single field inflation”

14:00 - 14:30 Xian Gao (Sun Yat-sen University)

“Propagation of the gravitational waves in a cosmological background”

14:30 - 14:50 Break

Chair: **Masakatsu Kenmoku**

14:50 - 15:20 (Seoul: 15:50)  
Chan Park (NIMS)  
“Observations of Gravitational Waves by Gauge-Invariant Measures of Light”

15:20 - 15:50 Shaoqi Hou (Wuhan University)  
“Gravitational memory effects and Bondi-Metzner-Sachs symmetries in scalar-tensor theories”

15:50 - 16:20 (Seoul: 16:50)  
Dong-Hoon Kim (Seoul National University)  
“Light Perturbed by Gravitational Waves”

16:20 - 16:40 Break

Chair: **Xian Gao**

16:40 - 17:10 (Tokyo: 17:40)  
Shi Pi (Kavli IPMU)  
“An analytical formula for induced gravitational waves with a finite-width peak”

### Section: **Experimental Studies of Gravity and Fundamental Physics Space Projects**

17:10 - 17:40 Cosimo Bambi (Fudan University)  
“Testing general relativity with black holes using X-ray observations”

17:40 - 18:10 (Rome: 11:40)  
Ignazio Ciufolini (Universita del Salento)  
“Tests of General Relativity and frame-dragging using the LARES and LARES 2 satellites”

## 18 August (Tuesday)

### Section: **Classical Gravity, GR Extensions**

Chair: **Shinji Mukohyama**

09:00 - 09:30 (Toronto: 21:00, 17 Aug)  
David Kubiznak (Perimeter Institute)  
“Is there a Gauss-Bonnet gravity in four dimensions?”

09:30 - 10:00 (New York: 21:30, 17 Aug)  
Ling Jun Wang (University of Tennessee at Chattanooga)  
“Unification of Gravitational and Electromagnetic Fields”

### Section: **Black Holes, Wormholes**

10:00 - 10:30 (Seoul: 11:00)  
Bogeun Gwak (Dongguk University)

“Kerr-Sen Black Hole and Weak Cosmic Censorship Conjecture”

10:30 - 10:50 Break

Chair: **Nobuyuki Sakai**

10:50 - 11:20 (Seoul: 11:50)

Dong-han Yeom (Pusan National University)

“Before the Page time: maximum entanglements or the return of the monster?”

11:20 - 11:50 Shih-Yuin Lin (National Changhua University of Education)

“A nearly black star may look like a 2D membrane”

11:50 - 12:20 (Tokyo: 12:50)

Shinji Mukohyama (YITP, Kyoto U)

“Black holes in scalar-tensor theory”

12:20 - 13:00 Long Break

Chair: **Shih-Yuin Lin**

13:00 - 13:30 (Tokyo: 14:00)

Nobuyuki Sakai (Yamaguchi University)

“Exotic Gravitating Objects”

13:30 - 14:00 Shoichi Kawamoto (National Tsing Hua University)

“Charged rotating BTZ black holes in noncommutative space and torsion gravity”

14:00 - 14:30 (Nursultan: 12:00)

Michael Good (Nazarbayev University)

“Radiation from an inertial mirror horizon”

14:30 - 14:50 Break

Chair: **Pradyumn Sahoo**

14:50 - 15:20 Che-Yu Chen (LeCosPA, National Taiwan University)

“Regular black hole interior spacetime supported by three-form field”

Section: **Dark Matter and Dark Energy**

15:20 - 15:50 (Tokyo: 16:20)

Keiko Nagao (Okayama University of Science)

“Directional direct detection of light dark matter”

15:50 - 16:20 (Tokyo: 16:50)

Naoya Kitajima (Tohoku University)

“Primordial Black Holes from QCD Axion Bubbles”

16:20 - 16:40 Break

Chair: **Muhammad Sharif**

- 16:40 - 17:10 **(Tokyo: 17:40)**  
Tetsutaro Higaki (Keio University)  
“Note on a solution to domain wall problem with the Lazarides-Shafi mechanism in axion dark matter models”
- 17:10 - 17:40 **(Seoul: 18:10)**  
Sungwook E Hong (University of Seoul)  
“Revealing the Local Cosmic Web by Deep Learning”
- 17:40 - 18:10 **(New Delhi: 15:10)**  
Goverdhan Khadekar (RTM Nagpur University)  
“Scalar fields Reconstruction of Viscous Power Law Entropy Corrected Holographic Dark Energy”

**19 August (Wednesday)**

Section: **Classical Gravity, GR Extensions**

Chair: **Jia-Rui Sun**

- 09:00 - 09:30 **(Los Angeles: 18:00, 18 Aug)**  
Vesselin Gueorguiev (Institute for Advanced Physical Studies)  
“The Scale Invariant Vacuum Theory as viable Cosmology Model”

Section: **Black Holes, Wormholes**

- 09:30 - 10:00 **(Santiago: 21:30, 18 Aug)**  
Angel Rincon (Pontifical Catholic University of Valparaiso)  
“Scale-dependent black holes”

**Short Talks**

Section: **Classical and Quantum Cosmology**

- 10:00 - 10:15 **(New York: 22:00, 18 Aug)**  
Yun Hao (U. of Massachusetts Dartmouth)  
“Motions of Light Rays and Galaxies in Cosmic Scales with the Cosmological Principle”
- 10:15 - 10:30 **(Tokyo: 11:15)**  
Yusuke Mikura (Nagoya University)  
“Conformal inflation in the metric-affine geometry”
- 10:30 - 10:50 Break

Chair: **Hwei-Jang Yo**

- 10:50 - 11:05 Qi Li (East China Normal University)

“The Effective Potential Originating from Swampland and the Nontrivial Brans-Dicke Coupling”

Section: **Black Holes, Wormholes**

- 11:05 - 11:20 **(Tokyo: 12:05)**  
Keisuke Nakashi (Rikkyo University)  
“Observability of the innermost stable circular orbit in a near-extremal Kerr black hole”
- 11:20 - 11:35 **(Tokyo: 12:20)**  
Yasutaka Koga (Rikkyo University)  
“Photon surfaces as pure tension shells: Uniqueness of thin shell wormholes”
- 11:35 - 11:50 **(Brisbane: 13:35)**  
Colin MacLaurin (University of Queensland)  
“3-Volumes of a black hole”
- 11:50 - 12:05 **(New Delhi: 09:20)**  
Kapil Chandra (Bastar University)  
“Does Hawking predict the correct temperature of black hole”
- 12:05 - 12:20 **(New Delhi: 09:35)**  
Yawar Hussain Khan (National Institute of Technology Srinagar)  
“Culetu regular black hole with asymptotically Minkowski core, its remnants and stability”

12:20 - 13:00 Long Break

Section: **Classical Gravity, GR Extensions**

Chair: **David Wiltshire**

- 13:00 - 13:30 **(Islamabad: 10:00)**  
Muhammad Sharif (University of the Punjab)  
“Effects of Charge on Gravastars in Modified Theory of Gravitation”
- 13:30 - 14:00 James Nester (National Central University)  
“Quasi-local gravitational energy”
- 14:00 - 14:30 **(Tokyo: 15:00)**  
Sinya Aoki (YITP, Kyoto University)  
“Local energy density and conserved energy in general relativity”

14:30 - 14:50 Break

Chair: **Roland Triay**

- 14:50 - 15:20 **(Moscow: 09:50)**  
Dmitry Gal'tsov (Moscow State University)  
“Successive dualities, NEC violation and singularities”

15:20 - 15:50 (Tallinn: 10:20)  
Sebastian Bahamonde (University of Tartu)  
“Solar System Tests in Modified Teleparallel Gravity”

15:50 - 16:20 Konstantinos Dialektopoulos (Yangzhou University)  
“Can Horndeski gravity be recast in the Teleparallel framework?”

16:20 - 16:40 Break

Chair: **Hing-Tong Cho**

16:40 - 17:10 Takafumi Kokubu (Hunan Normal University)  
“High energy collision without fine tuning: Acceleration and multiple collisions of shells in a bound system”

17:10 - 17:40 (New Delhi: 14:40)  
Pradyumn Sahoo (Birla Institute of Technology & Science-Pilania)  
“A non-singular bounce in  $f(R,T)$  gravitation”

17:40 - 18:10 (Valletta: 11:40)  
Jackson Levi Said (University of Malta)  
“Teleparallel Extensions to Cosmological Models”

## 20 August (Thursday)

Section: **Classical and Quantum Cosmology**

Chair: **Wonwoo Lee**

09:00 - 09:30 (New York: 21:00, 19 Aug)  
Jong-Ping Hsu (U. of Massachusetts Dartmouth)  
“Correlations of Hubble's Law and the Future of the Universe Based on the Strong Cosmological Principle and Yang-Mills Gravity”

09:30 - 10:00 (New York: 21:30, 19 Aug)  
Nikodem Poplawski (University of New Haven)  
“Big Bounce and inflation from spin and torsion”

10:00 - 10:30 (Mexico City: 21:00, 19 Aug)  
Sujoy Modak (Universidad de Colima)  
“New geometric and field theoretic aspects of radiation dominated early universe”

10:30 - 10:50 Break

Chair: **Hiroyuki Takata**

10:50 - 11:20 (Toronto: 22:50, 19 Aug)  
Naritaka Oshita (Perimeter Institute)  
“Hawking-Moss transition catalyzed by a black hole”

11:20 - 11:50 Shun-Pei Miao (National Cheng Kung University)

“Fine Tuning Problems with Cosmological Coleman-Weinberg Potentials”

11:50 - 12:20 (Tokyo: 12:50)

Yuichiro Tada (Nagoya University)

“Manifestly covariant theory of stochastic inflation”

12:20 - 13:00 Long Break

Chair: **Roh-Suan Tung**

13:00 - 13:30 Xun Xue (East China Normal University)

“Spatial Curvature and Large Scale Lorentz Violation”

13:30 - 14:00 Chopin Soo (National Cheng Kung University)

“Cosmic time and reduced phase space of General Relativity”

14:00 - 14:30 Hoi Lai Yu (Academia Sinica)

“Intrinsic Time Quantum Gravity”

14:30 - 14:50 Break

### Short Talks

Chair: **Shoichi Kawamoto**

Section: **Black Holes, Wormholes**

14:50 - 15:05 Hsu-Wen Chiang (LeCosPA, National Taiwan University)

“Generic 3-species model for unitary black hole evolution”

15:05 - 15:20 Yu-Hsien Kung (LeCosPa, National Taiwan University)

“Modification to the Hawking temperature of a dynamical black hole by a flow-induced supertranslation”

15:20 - 15:35 (Moscow: 10:20)

Igor Bogush (Moscow State University)

“Kaluza-Klein dyons: regular and singular”

Section: **Dark Matter and Dark Energy**

15:35 - 15:50 (Seoul: 16:35)

Sung Mook Lee (Yonsei University)

“Primordial Black Holes in Higgs- $R^2$  Inflation as a Whole Dark Matter”

Section: **Gravitational Waves**

15:50 - 16:05 Joseph Gais (Chinese University of Hong Kong)

“Echoes of the Gravitational Atom: A Novel Probe of the Scalar Ultralight Boson”

16:05 - 16:20 Mark Ho-Yeuk Cheung (Chinese University of Hong Kong)



“Ringdown Spectroscopy of Rotating Black Holes Pierced by Cosmic Strings”

16:20 - 16:40 Break

Chair: **Yen Chin Ong**

16:40 - 16:55 **(New Delhi: 14:10)**

Rafia Sarwar (Institute of Space Technology)  
“Event Rates of Extreme Mass Ratio Inspirals (EMRIs) and Intermediate Mass Ratio Inspirals (IMRIs) in Milky Way Galaxy”

16:55 - 17:10 **(Rome: 11:55)**

Alberto Mangiagli (University of Milano - Bicocca)  
“Merger rate of stellar black hole binaries above the pair-instability mass gap”

Section: **Relativistic Astrophysics**

17:10 - 17:25 **(Warsaw: 12:10)**

Rajeev Singh (Inst. of Nuclear Physics Polish Academy of Sciences)  
“Heavy-Ion Collisions and Fluid Dynamics”

Section: **Classical Gravity, GR Extensions**

17:25 - 17:40 Zhi-Bang Yao (Sun Yat-sen University)

“Spatially covariant gravity theories with two tensorial degrees of freedom”

17:40 - 17:55 **(Tokyo: 18:40)**

Shota Yanai (Tokyo University of Science)  
“Compact, charged boson-stars, -shells in the  $CP^N$  gravitating nonlinear sigma model”

17:55 - 18:10 Hrishikesh Chakrabarty (Fudan University)

“Black hole bounce and birth of a baby universe”

18:10 - 18:25 **(Zurich: 12:10)**

Jinzhaoh Wang (ETH)  
“Outer entropy = Bartnik-Bray quasilocal mass”

Section: **Dark Matter and Dark Energy**

18:25 - 18:40 **(New York: 6:25)**

Yiyi Zhu (University of Massachusetts Lowell)  
“The Role of Non-Relativistic Neutrinos in Dark Matter”

**21 August (Friday)**

Section: **Relativistic Astrophysics**

Chair: **Dong-han Yeom**

09:00 - 09:30 **(Buenos Aires: 22:00, 20 Aug)**  
Marcelo Rubio (IATE-OAC, UNC)  
“A numerical scheme for solving the relativistic dissipative fluid equations”

Section: **Strings, Branes, Higher Spin Fields and Quantum Gravity**

09:30 - 10:00 **(Toronto: 21:30, 20 Aug)**  
Robert Mann (University of Waterloo)  
“Holographic Complexity and Thermodynamic Volume”

10:00 - 10:30 Mitsutoshi Fujita (Sun Yat-Sen University)  
“Kibble-Zurek Scaling in a Holographic p-wave Superconductor”

10:30 - 10:50 Break

Chair: **Tomohiro Harada**

10:50 - 11:20 Jia-Rui Sun (Sun Yat-Sen University)  
“On the emergence of gravitational dynamics from tensor networks”

11:20 - 11:50 **(New Delhi: 8:50)**  
Vishnu Rajagopal (University of Hyderabad)  
“Kappa deformed oscillator algebra and Unruh effect”

11:50 - 12:20 **(New Delhi: 9:20)**  
Chiranjeeb Singha (Indian Institute of Science Education and Research)  
“Hamiltonian-based derivation of the Hawking effect”

12:20 - 13:00 Long Break

Chair: **Sung-Won Kim**

13:00 - 13:30 Homa Shababi (Sichuan University)  
“The Minimal Length Uncertainty and the Tsallis statistical mechanics”

13:30 - 14:00 **(Tomsk: 12:30)**  
Hiroyuki Takata (Tomsk State Pedagogical U.)  
“Fronsdal like Lagrangian for continuous spin by BRST method”

14:00 - 14:30 **(Minsk: 09:00)**  
Michael Ivanov (Belarus State U. of Informatics and Radioelectronics)  
“Different expectations about quantum gravity”

14:30 - 14:50 Break

Section: **Black Holes, Wormholes**

Chair: **Xun Xue**

14:50 - 15:20 **(Seoul: 15:50)**  
Sung-Won Kim (Ewha Womans University)  
“Creation and Annihilation of Wormhole in Matter-Dark Energy”

Universe"

Section: **White Dwarfs, Neutron Stars and Gamma Ray Bursts**

15:20 - 15:50 (Rome: 09:20)

Gregory Vereshchagin (ICRANet)

“Diffusive photospheres and thermal emission in early afterglows of gamma-ray bursts”

Section: **Numerical Relativity**

15:50 - 16:20 (London: 08:50)

Xiaoyi Xie (University of Southampton)

“Instabilities in neutron-star post-merger remnants”

16:20 - 16:40 Break

Section: **Relativistic Astrophysics**

Chair: **Claus Laemmerzahl**

16:40 - 17:10 Sousuke Noda (Yangzhou University)

“Blandford-Znajek process as Alfvénic superradiance”

17:10 - 17:40 (Tokyo: 18:10)

Yun-Long Zhang (YITP, Kyoto University)

“Gravitational Waves and Possible Fast Radio Bursts from Axion Clumps”

17:40 - 18:10 (Rome: 11:40)

Remo Ruffini (ICRANet)

“The geodesic motion of S2 and G2 as a test of the fermionic dark matter nature of our galactic core”