

Scientific Program

9th International Conference on Gravitation & Cosmology



IISER Mohali
December 10 to 13
2019

Organized by



Plenary Sessions

ICGC 2019 Program

December 10, 2019

From	To	Session Chair	Speaker	Title
9:00	9:30	Inauguration		
9:30	10:15	Bala Iyer	David Blair	Einstein-First: bringing the reality of Einsteinian physics to our children.
10:15	11:00		Takahiro Tanaka	Testing gravity using gravitational waves
11:00	11:30	Poster viewing and Coffee/Tea Break		
11:30	12:15	Archana Pai	Lia Medeiros	Event Horizon Telescope
12:15	13:00		Tuhin Ghosh	Planck legacy release 2018 and consistency with other data sets
13:00	14:00	Lunch		
14:00	14:45	Narayan Banerjee	Chris Van Den Broeck	Modified gravity theories and observational constraints
14:45	15:30		Teruaki Suyama	A review of primordial black holes
15:30	16:00	Coffee/Tea Break		
16:00	18:00	Parallel Sessions		

ICGC 2019 Program

December 11, 2019

From	To	Session Chair	Speaker	Title
9:00	9:45	Sanjeev Dhurandhar	Tirthankar Roy Choudhury	Cosmology with the first stars
9:45	10:30		Stefano Camera	Upcoming large scale structure surveys and implications for cosmology
10:30	11:30	Poster viewing and Coffee/Tea Break		
11:30	12:15	Sukanta Bose	Basudeb Dasgupta	Dark Matter: How's it going?
12:15	13:00		Li Ju	Challenges for the 3 rd generation GW detectors
13:00	14:00	Lunch		
14:00	15:30	Parallel Sessions		
15:30	16:00	Coffee/Tea Break		
16:00	17:30	Parallel Sessions		
17:30	18:00	Poster viewing and Coffee/Tea Break		
18:00	19:00	Evening Lecture: Centenary of Eddington's 1919 expedition to test General Relativity. Speaker: Kailash sahu		

ICGC 2019: Program

December 12, 2019

From	To	Session Chair	Speaker	Title
9:00	9:45	Golam Hossain	T. P. Singh	Quantum gravity theories, and quantum foundations
9:45	10:30		Sumanta Chakraborty	Gravitational Action, Thermality and Information Loss
10:30	11:30	Poster viewing and Coffee/Tea Break		
11:30	12:15	H. K. Jassal	Jess McIver	Cosmic collisions observed by LIGO and Virgo
12:15	13:00		Vincent Vennin	Primordial Black Holes from Quantum Diffusion during Cosmic Inflation
13:00	14:00	Lunch		
14:00	14:45	C. S. UnniKrishanan	Samaya Nissanke	GW 170817, short GRBs, and multi-messenger astrophysics
14:45	15:30		Hendrik Ulbricht	Experimental and observational tests of quantum gravity
15:30	16:00	Coffee/Tea Break		
16:00	17:30	Parallel Sessions		
17:30	18:00	Poster viewing and Coffee/Tea Break		

ICGC 2019: Program

December 13, 2019

From	To	Session Chair	Speaker	Title
9:00	9:45	L. Sriramkumar	Bharat Ratra	Spatial Curvature, Dark Energy Dynamics, Neither, or Both?
9:45	10:30		Alexei Starobinsky	Inflation: the simplest models and expected discoveries
10:30	11:30	Poster viewing and Coffee/Tea Break		
11:30	12:15	Jasjeet S. Bagla	Somnath Bharadwaj	21-cm cosmology
12:15	13:00		Suneeta Varadarajan	The instability of anti-de Sitter spacetime: analytical aspects
13:00	15:00	Closing and Lunch		

Parallel Sessions

WORKSHOP 1

Gravitational Waves and High Energy Astrophysics

December 10, 2019

Session Chairs :

Poonam Chandra (poonam@ncra.tifr.res.in)

Anand Sengupta (asengupta@iitgn.ac.in)

Time	Speaker	Title
16:00 – 16:30	Sukanta Bose	Constraining neutron star equation of state using gravitational wave observations of compact binaries with neutron stars.
16:30 – 16:45	Golam M Hossain	Revisiting equation of state for white dwarfs within finite temperature quantum field theory
16:45 – 17:00	Muhammed Saleem	Constraining the properties of electromagnetic counterparts of binary neutron star mergers
17:00 – 17:15	Vivek Venkatraman Krishnan	Gravitational dynamics of relativistic binary pulsars
17:15 – 17:30	Rakesh Kabir	Use of wavelet transform and neural networks for analyzing gravitational waves

December 11, 2019

Session Chairs :

Poonam Chandra (poonam@ncra.tifr.res.in)

Anand Sengupta (asengupta@iitgn.ac.in)

Time	Speaker	Title
14:00 – 14:30	C. S. Unnikrishnan	Experiments to Ascertain the True Relativistic Nature of the Propagation of Gravitational Waves and Light
14:30 – 14:45	Varun Srivastava	Detection Prospects of Core-Collapse Supernovae with Supernova-Optimized Third-Generation Gravitational-wave Detectors
14:45 – 15:00	Disha Sawant	Long duration bursts in ET
15:00 – 15:15	Arman Tursunov	Fifty years of energy extraction from rotating black holes
15:15 – 15:30	Kailash Chandra Sahu	Detecting Isolated, Stellar-Mass Black Holes through Relativistic Deflection

Time	Speaker	Title
16:00 – 16:30	Abhirup Ghosh	Test of the Black-hole No-hair Conjecture with Observations of Gravitational Waves
16:30 – 16:45	Soumen Roy	Detection of non-quadrupole modes of gravitational waves from multiple inspiralling blackholes
16:45 – 17:00	Shaswat Kapadia	Compact Binary Merger Rates from LIGO-Virgo's First and Second Observing Runs
17:00 – 17:15	Krishnendu NV	Constraints on the binary black hole nature of GW151226 and GW170608 from the measurement of spin-induced quadrupole moments
17:15-17:30	Surajit Kalita	Continuous gravitational wave from magnetized compact objects

December 12, 2019

Session Chairs :

Poonam Chandra (poonam@ncra.tifr.res.in)

Anand Sengupta (asengupta@iitgn.ac.in)

Time	Speaker	Title
16:00 – 16:15	Vaishak Prasad	The correlation between the shear of the dynamical horizon of black holes and the gravitational wave strain at infinity in a BBH merger.
16:15 – 16:30	Sayantani Dutta	PARAMETRISED TESTS OF GENERAL RELATIVITY USING SINGULAR VALUE DECOMPOSITION.
16:30 – 16:45	Sunil Choudhary	Technique to distinguish Gravitational wave signals from noise transients
16:45-17:00	Apratim Ganguly	Constraining the fraction of compact dark matter from lensing of gravitational waves
17:00-17:15	Nirban Bose	Is eccentricity a crucial player in pinning down the binary black hole formation channel?
17:15-17:30	Aditya Vijaykumar	Probing Large Scale Structure with gravitational-wave observations of binary black holes
17:30-17:45	Srashti Goyal	Extracting gravitational wave polarizations from strongly lensed signals of the binary black hole mergers.

Workshop 2

Cosmology

December 10, 2019

Session Chairs :

Surhud More (surhud@iucaa.in)

Nishikanta Khandai (nkhandai@niser.ac.in)

Time	Speaker	Title
16:00 – 16:30	CS Unnikrishnan	Modified General Relativity Anchored on Cosmological Basis and the Centenary Einstein Equations
16:30 – 16:45	Sharvari Nadkarni-Ghosh	One-point PDF of the density field from spherical dynamics: Early dark energy vs. LCDM.
16:45-17:00	Chetan Bavdhankar	Towards the Local Group Dipole measurement with Supernova type Ia
17:00-17:15	Saugata Barat	Modeling Gravitational Wave Sources at High Redshifts: The X-ray Counterpart
17:15-17:30	Sayantani Bera	Constraining the Hubble parameter with galaxy-binary black hole cross-correlation measurements
17:30-17:45	Divya Rana	Weak lensing analysis of gamma groups using subaru HSC
17:45-18:00	Amit Kumar	weak lensing around satellite galaxies in a galaxy cluster

December 11, 2019

Session Chairs :

Surhud More (surhud@iucaa.in)

Nishikanta Khandai (nkhandai@niser.ac.in)

Time	Speaker	Title
14:00-14:15	Ankan Mukherjee	Constraining the dark energy statefinder hierarchy in a kinematic approach
14:15 -14:30	Archita Bhattacharyya	Constraining Dark Energy Perturbations: the Role of Early Dark Energy
14:30 – 14:45	Srijita Sinha	Density perturbation in an interacting holographic dark energy model
14:45-15:00	Ranbir Sharma	Reconstruction of Late time cosmology using Principal Component Analysis
15:00-15:15	Vipin Sharma	Effects of modified $f(R)$ gravity in galactic rotation and lensing profiles

16:00 -16:15	Atrideb Chatterjee	Ruling out 3 keV warm dark matter using 21 cm-EDGES data
16:15-16:30	Suman Chatterjee	Prospects and challenges for detecting the 21cm power spectrum with the Ooty Wide Field Array (OWFA)
16:30-16:45	Madhurima Choudhury	21cm signal extraction using ANN
16 :45-17:00	Pankaj Saha	Connecting CMB anisotropy and cold dark matter phenomenology via reheating
17:00-17:15	Sampurn Anand Jha	Cosmic viscosity as a remedy for tension between PLANCK and LSS data

December 12, 2019

Session Chairs :

Surhud More (surhud@iucaa.in)

Nishikanta Khandai (nkhandai@niser.ac.in)

Time	Speaker	Title
16:00 – 16:30	L. Sriramkumar	Can bouncing scenarios generate primordial features
16:30 – 16:45	Ragavendra H.V.	Imprints of the onset of inflation on the scalar bispectrum
16:45-17:00	Jaffino Stargen	Quantum-to-classical transition of primordial cosmological perturbations in bouncing universes
17:00-17:15	Sukannya Bhattacharyya	Primordial Black Holes and Gravitational Waves in non-standard cosmologies
17:15-17:30	Ruchika Kaushik	Bayesian evidences for dark energy models in light of current observational data
17:30-17:45	Arnab Chakraborty	Detail analysis of foregrounds in ELAIS-N1 field using uGMRT

WORKSHOP 3

**Classical, Quantum Gravity and Early universe
December 10, 2019**

Session Chairs :

Dawood Kothawala (dawood@iitm.ac.in)

Rajeev Kumar Jain (rkjain@iisc.ac.in)

Time	Speaker	Title
16:00 – 16:30	Sandipan Sengupta	A dynamical formulation of vacuum gravity based on an extra dimension
16:30 – 16:45	Abhirup Ghosh	A "No-hair" test for Binary Black Holes with Observations of Gravitational Waves
16:45 – 17:00	Srijit Bhattacharjee	Strong cosmic censorship conjecture for AdS black holes
17:00 – 17:15	Karthik Rajeev	Exploring the Rindler vacuum and the Euclidean Plane
17:15 – 17:30	Indranil Chakraborty	Displacement and velocity memory effects in exact plane gravitational wave spacetimes

December 11, 2019

Session Chairs :

Dawood Kothawala (dawood@iitm.ac.in)

Rajeev Kumar Jain (rkjain@iisc.ac.in)

Time	Speaker	Title
14:00 – 14:30	S. Shankaranarayanan	Near-horizon black-hole symmetries
14:30 – 14:45	Mandar Patil	Gravitational Lensing by Binary Black Holes
14:45 – 15:00	Bibhas Ranjan Majhi	Unruh effect and Fluctuation-Dissipation relation
15:00 – 15:15	Sanjeev Kalita	On new gravitational physics near the Galactic Center black hole
15:15 – 15:30	Soumen Mondal	The relativistic equation of states in accretion and wind flows

Time	Speaker	Title
16:00 – 16:15	Nilanjandev Bhaumik	Primordial black holes dark matter from inflection point models of inflation and the effects of reheating
16:15 – 16:30	Abhishek Naskar	Non-Gaussian primordial gravitational waves from inflation
16:30 – 16:45	Swagat Sourav Mishra	Primordial Black Holes from a tiny bump in the Inflaton potential
16:45 – 17:00	Jishnu Sai P.	Consistency relations for cosmic magnetic fields using delta N formalism
17:00-17:15	Satish Kumar Saravanan	Influence of spin in curved geometries.
17:15-17:30	Sarbari Guha	Generalized second law of thermodynamics in an expanding FRW universe

December 12, 2019

Session Chairs :

Dawood Kothawala (dawood@iitm.ac.in)

Rajeev Kumar Jain (rkjain@iisc.ac.in)

Time	Speaker	Title
16:00 – 16:30	C. S. Unnikrishnan	Gravity, Quantum State Reduction, and The Quantum Measurement Problem
16:30 – 16:45	Abhishek Mathur	Observer independent SJ formalism for QFT in a hyperbolic spacetime
16:45 – 17:00	Suman Ghosh	Particle production by scalar and spin 1/2 fields in a cosmological braneworld background
17:00-17:15	Poulami Dutta Roy	Scalar quasi-normal modes in a symmetric, finite triangular barrier

†† †† †† †† †† ††