

**ALTECOSMOFUN'21**  
**ALTERNATIVE GRAVITIES AND**  
**FUNDAMENTAL COSMOLOGY CONFERENCE**  
**And Doctoral Students Workshop in Cosmology**

**06-10 SEPTEMBER 2021, SZCZECIN, POLAND**

	INVITED PLENARY SPEAKERS
	ALT+DE: alternative gravities and dark energy
	ALT+DM: alternative gravities and dark matter
	ALT+GW/BH: alternative gravities, gravitational waves and compact objects
	ALT+QG: quantum gravity as alternative gravity
	ALT+PHEN: alternative gravity phenomenology (GUP, Lorentz Violation, Varying Constants)
	ALT+FUN: alternative gravity and fundamental theories (strings, branes)
	PH.D. WORKSHOP
	PUBLIC TALK
	BREAK/LUNCH BREAK

# MONDAY 06-09-2021

8:30 – 9:00 Registration/Gathering

CHAIR: MARIUSZ P. DĄBROWSKI

9:00 – 9:15 Conference Opening

9:15 – 10:15 LAVINIA HEISENBERG: “Roadmap of gravity”

10:15 – 11:15 ENRIQUE GAZTAÑAGA: “The Black Hole Universe: the perfect cosmological principle”

11:15 – 11:30 Break

11:30 – 12:30 JUTTA KUNZ: “Compact Objects in Alternative Gravities”

12:30 – 13:30 Michal Artymowski: **New applications of unparticles: Inflation, dark energy, bouncing cosmologies, and the Hubble tension**

ALT+PHEN Andrea Giusti: **Thermodynamics of scalar-tensor gravity**  
Samuel Barroso Bellido: **Entanglement Entropy at Critical Points in the Multiverse**

13:30 – 14:30 Lunch Break

CHAIR: MAREK BIESIADA

14:30 – 15:30 Sebastián Franchino-Viñas: **Linking the lithium problem and the  $H_0$  tension: the gravitational constant at BBN**

ALT+PHEN Konstantin Zlochastiev: **Superfluid vacuum theory predictions for astrophysics**

Ekim Taylan Hanimeli: **Can dark energy emerge from a time-dependent  $G$  and spacetime geometry?**

15:30 – 16:30 Jerome Quintin: **Early universe cosmology in fundamentally motivated alternative theories of gravity and the principle of finite amplitudes**

ALT+FUN Eduardo Guendelman: **Dynamical String Tension Theories: New possibilities for Gravity Cosmology, Thermodynamics and Brane world Scenarios**

Laur Järv: **Global portraits of nonminimal inflation**

16:30 – 16:50 Break

CHAIR: MAREK ROGATKO

16:50 – 17:50 PAUL C. W. DAVIES: “The gravitational entropy of the Universe”

17:30 – 18:50 Andrew Finch: **The 3+1 Formalism in the Geometric Trinity of Gravity**

ALT+FUN Yu-Hsien Kung: **Modified Teleparallel Gravity induced by quantum fluctuations in semi-classical approach**

Snehasish Bhattacharjee: **Baryogenesis in  $f(P)$  Gravity**

## TUESDAY 07-09-2021

CHAIR: VINCENZO SALZANO

9:00 – 10:00	MARTIN KUNZ “Testing gravity and constraining dark energy with Euclid”
10:00 – 11:00	JOHN K. WEBB “Varying fine structure constant - Latest developments”
11:00 – 11:30	Break
11:30 – 12:30	IVETTE FUENTES “Quantum Frequency Interferometry: with applications ranging from gravitational wave detection to dark matter searches”
12:30 – 13:30	NIAYESH AFSHORDI “Mystery Noise in Gravitational Wave Detectors, as a probe of Fundamental Physics”
13:30 – 14:30	Lunch Break

CHAIR: MIGUEL ZUMALACARREGUI

14:30 – 16:30 ALT+GW/BH	Aneta Wojnar: <b>Modified gravity effects on non-compact spherical-symmetric objects</b> Aizhan Myrzakul: <b>CGHS Moving Mirror</b> Bartłomiej Kiczek: <b>Axionlike clouds in the vicinity of compact objects</b> Muhammad Sharif: <b>Alternative Gravity and Gravastars</b> Johannes Münch: <b>Effective Quantum Black Hole Collapse via Surface Matching</b> Mariana Carrillo Gonzalez: <b>Scattering Amplitudes for Binary Systems beyond GR</b>
16:30 – 16:50	Break

CHAIR: PIOTR SUŁKOWSKI

16:50 – 18:50 ALT+QG	Gioele Botta: <b>Cosmological Dynamics from LQG</b> Igor Kanatchikov: <b>Is quantum TEGR equivalent to quantum GR?</b> Zbigniew Drogosz: <b>Curvature for quantum gravity</b> Yannick Kluth: <b>Quantum Effects in Higher Order Theories of Gravity</b> Rafael Jiménez: <b>Effects of a scalar field potential on primordial perturbations in Hybrid (Loop) Quantum Cosmology</b> Lesław Rachwał: <b>Renormalization Group in Six-derivative Quantum Gravity</b>
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## WEDNESDAY 08-09-2021

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### CHAIR: AGNIESZKA POLLO

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9:00 – 10:00	ALEXEI A. STAROBINSKY: “Generating peaks in primordial perturbation power spectra”
10:00 – 11:00	ASTRID EICHHORN: “Asymptotic safety - a new symmetry principle for quantum spacetime and (dark) matter”
11:00 – 11:30	Break
11:30 – 12:30	ELEONORA DI VALENTINO: “Cosmological Tensions: hints for a new concordance model?”

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### CHAIR: JACKSON LEVI SAID

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12:30 – 13:50	Noemi Frusciante: <b>Modified gravity in light of cosmic tensions</b>
ALT+DE	Michal Zajacek: <b>Application of the Broad Line Region radius-luminosity relation in cosmology</b>
	Xiankai Pang: <b>Phantom-like dark energy from quantum gravity</b>
	Saikat Chakraborty: <b>Towards a LambdaCDM Universe in f(R) gravity</b>
13:50 – 14:30	Lunch Break

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### CHAIR: NOEMI FRUSCIANTE

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14:30 – 15:50	Nihan Katırcı: <b>Simple-graduated dark energy and spatial curvature: Do the simplest negative energy densities alleviate the H0 tension?</b>
ALT+DE	Eoin O Colgain: <b>A resolution to Hubble tension</b>
	Pradyumn Kumar Sahoo: <b>Existence of bulk viscous universe in f(R,T) gravity and confrontation with observational data</b>
	Jackson Levi Said: <b>Nonparametric Techniques to Reconstructing Cosmological Data</b>
15:50 – 16:10	Break

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### CHAIR: ANDRZEJ KRÓLAK

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16:10 – 17:10	NICOLAS YUNES “ <b>Probing Fundamental Physics in Extreme Gravity with Gravitational Waves</b> ”
17:10 – 18:30	Miguel Zumalacarregui: <b>Gravitational Wave lensing beyond Einstein’s General Relativity</b>
ALT+GW/BH	Alfredo Delgado Miravet: <b>Vector fields and gravitational wave propagation</b>
	Misba Afrin: <b>Shadow cast by rotating black hole with a cosmological constant</b>
	Maria Caruana: <b>Gravitational Wave Propagation and Polarizations in the Teleparallel analog of Horndeski Gravity</b>
18:30 – 19:00	Break

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**CHAIR: MARIUSZ P. DĄBROWSKI**

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**19:00 – 20:30**

**Public talk**

# THURSDAY 09-09-2021

CHAIR: TOMASZ DENKIEWICZ

9:00 – 11:00

Riccardo Della Monica : **Orbital precession of the S2 star in Scalar-Tensor-Vector-Gravity**

Alex Gough : **Modified gravity and dark energy from one point matter statistics**

Reginald Christian Bernardo: **A data-driven reconstruction of Horndeski gravity using late-time Hubble data**

Enrico Laudato: **Multi-component DHOST analysis in galaxy clusters**

Georg Herzog : **Neutron Stars in Palatini  $f(R)=R+\alpha R^2$  and  $f(R,Q)=R+\alpha R^2+\beta Q$  Theories**

Arkadiusz Bochniak: **Doubled FLRW models from the spectral geometry**

11:00 – 11:20

Break

CHAIR: ADAM BALCERZAK

11:20 – 13:20

Daniel Blixt: **Viability of teleparallel theories of gravity**

Jose Perdiguero: **Polynomial Affine Gravity**

Roberto Caroli: **Ricci Cosmology in light of astronomical data**

Zinovia Oikonomopoulou: **Classification of Teleparallel Horndeski Cosmology via Noether Symmetries**

Sreekanth Harikumar: **Scalar Tensor Vector Gravity**

Daniel Nemeth: **Scalar Fields in CDT Quantum Gravity**

13:20 – 14:30

Lunch Break

CHAIR: MICHAL ARTYMOWSKI

14:30 – 16:30

ALT+PHEN

Bivudutta Mishra : **Matter Bounce Scenario in  $f(Q,T)$  Gravity**

Jakub Supel : **Theoretical Constraints on Boostless Amplitudes and Cosmological Correlators**

Jan Kwapisz : **Is asymptotically safe inflation eternal?**

Zurab Tavartkiladze: **Inflation From The MSSM. N=1 Supergravity Setup**

Hareesh Thuruthipilly: **On the emergence of cosmic space and the first law of thermodynamics in a non-flat universe**

Mehrdad Rasouli: **Inflationary universe in deformed phase space Sáez–Ballester theory**

16:30 – 16:50

Break

CHAIR: ANTONIO LOPEZ MAROTO

16:50 – 17:50

ALT+DM

Adil Jueid: **Affine gravitational scenario for dark-matter decays**

Vesselin Gueorguiev: **Progress within the Scale Invariant Vacuum (SIV) Paradigm**

17:50 – 18:50

ALT+GW/BH

Roberto Casadio: **Dark Matter from quantum Dark Energy**

Bertha Cuadros-Melgar: **Quasinormal frequencies and black hole shadow radius: an analytical correspondence**

Che-Yu Chen : **Probing black holes without  $Z_2$  symmetry: A theory-agnostic approach**

Saboura sadat Zamani: **Gravitational lensing by a black hole in Poincaré gauge theory**

# FRIDAY 10-09-2021

CHAIR: EMMANUEL SARIDAKIS

9:00 – 10:00	FABIO SCARDIGLI: “Generalized uncertainty principle, deformation parameter, and Lorentz symmetry violation”
10:00 – 11:00	ANNA POLLMANN: “Physics beyond the Standard Model with IceCube”
11:00 – 11:30	Break
11:30 – 12:30	ROBERTO EMPARAN: “Aspects of traversable wormholes”
12:30 – 13:30	Ruth Lazkoz: <b>Observational constraints on cosmological solutions of <math>f(Q)</math> theories</b>
ALT+DE	Rebecca Briffa: <b>Impact of <math>H_0</math> priors on <math>f(T)</math> late time cosmology</b> Daniele Vernieri: <b>Covariant effective actions for bouncing cosmology in fourth-order gravity</b>
13:30 – 14:30	Lunch Break

CHAIR: TESSA BAKER

14:30 – 16:10	Lorenzo Pizzuti: <b>Testing screening mechanisms with mass profiles of galaxy clusters</b>
ALT+DM	Ivan De Martino: <b>Distinguishing cores from cusps in the dark matter density profile using the proper motions measurements</b> Andrius Tamosiunas : <b>On the Viability of Chameleon Gravity in Galaxy Clusters and Cosmic Voids</b> Francesco Pace: <b>The quasi-static approximation in Horndeski models</b> Ashim Sen Gupta: <b>Nonlinear structure in general modified gravity models</b>
16:10 – 16:30	Break

CHAIR: GIULIA GUBITOSI

16:30 – 17:50	Luciano Petrucciello: <b>Quantum gravitational decoherence from minimal length</b>
ALT+FUN	Andrzej Sitarz: <b>Modified bimetric-like gravity from spectral geometry</b> Aleksandra Piórkowska-Kurpas: <b>Graviton mass in the era of multi-messenger astronomy</b> Syed Umair Naqvi: <b>Freely-falling bodies in standing-wave spacetime</b>

CHAIR: MARIUSZ P. DĄBROWSKI

17:50 – 18:00	Summary of the conference
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