Tehran Meeting on Cosmology

5 -10 August 2017 (14 -19 Mordad 1396)

IPM, Tehran, Iran

Title of Oral Presentation

	First Name	Last Name	Institute	Status
1	Alireza	Allahyari	Sharif university of technology	PhDStu
	Title: Long gradient mode and large-scale structure observables **Abstract:** We extend the study of long-mode perturbations to other large-scale observables such as cosmic rulers, galaxy-number counts, and halo bias. The long mode is a pure gradient mode that is still outside an observer's horizon. We insist that gradient-mode effects on observables vanish. It is also crucial that the expressions for observables are relativistic. This allows us to show that the effects of a gradient mode on the large-scale observables vanish identically in a relativistic framework. To study the potential modulation effect of the gradient mode on halo bias, we derive a consistency condition to the first order in gradient expansion. We find that the matter variance at a fixed physical scale is not modulated by the long gradient mode perturbations when the consistency condition holds. This shows that the contribution of long gradient modes to bias vanishes in this framework.			
2	Hossein	Bazrafshan Moghaddam	McGill University	PhDStu
	Title: Is there any loophole for primordial Magneto-genesis without the strong coupling problem? **Abstract:** The strong coupling problem and the backreaction problem are the two challenges that any primordial magneto-genesis theory should overcome. In this short talk, I am going to present a no-go theorem for primordial magneto-genesis for a class of theories with kinetic coupling to electromagnetism field and assuming that the coupling function is an increasing function go time.			
3	L'Huillier	Benjamin	KASI	PostDoc
	Title: Constraining the early Universe with the large-scale structure			
4	Marzieh	Farhang	Shahid Beheshti University	
5	**Title: A multi-scale pipeline to search for string-induced CMB anisotropies** **Abstract:** We propose a multi-scale edge-detection algorithm to search for the imprint of cosmic strings (CSs) network on CMB anisotropies, based on the Kaiser-Stebbins phenomenon. Curvelet decomposition and extended Canny algorithm are used to en- hance the string detectability. Various statistical tools are then applied to quantify the deviation of CMB maps with CS contribution from pure Gaussian, inflation-induced anisotropies. In this talk I will introduce the pipeline and report on its performance based on simulations of cosmic string anisotropies.			
6	Hajar	Vakili	Sharif University of Technology	PhDStu
	Title: Structure Formation in Modified Gravity (MoG) **Abstract:** The MOdified Gravity model (MOG) has been proposed by John Moffat to explain galactic dynamics using the existing baryonic matter. Being a covariant extension of General Relativity, this model is derived from the action principle that introduces two scalar fields and a vector field in addition to GR fields. In this work we investigate the nonlinear cosmological structure formation in the weak field limit of MOG via numerical calculation of spherical collapse. We show that the scale dependent dynamics in MOG drives inhomogeneities in an initially homogenous spherical structure. Also the formation of small scale structures is slower in MOG than the Newtonian plus dark matter model and it can potentially solve the missing mass problem. Also we study the formation of shell galaxies in MOG and compare it with MOND and standard model of Cosmology. We show that there are possible differences in shells in an initially same condition that could be used to distinguish between the models.			
7	Zeinab	Shafiee	Bonn University / International Max Planck Research School Bonn	PhDStu

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	First Name	Last Name	Institute	Status
	Title: "Determining Weak Gravitational Lensing Masses for Six Galaxy Clusters from the 400d X-ray Survey" **Abstract:** Determination of mass function of galaxy clusters, especially at high redshifts, can significantly improve the constraints on cosmological parameters. Comparing mass estimations of galaxy clusters from independent methods, such as weak lensing (WL) and X-ray studies, gives a better understanding of systematic effects and biases of each method. Hence, the resulting masses are more accurate and will improve our knowledge of the cosmic evolution. To this end, in this study, we determine the WL masses of six high-redshift galaxy clusters (0.35<z<0.47). These clusters are chosen from the "400d cosmological cluster sample'', an X-ray selected complete sample of 36 galaxy clusters (0.35<z<0.9). Each cluster is observed in at least three optical bands, which enables us to use the photometric properties of galaxies to separate foreground galaxies for a reliable WL mass reconstruction. In this talk, I explain our method and technical improvements, and will present the final WL masses of these six clusters.			
8	**Nosratollah**	**Jafari**	**Khazar University,**	**Faculty**
	Title: Precession of perihelia in the Fisher metric **Abstract:** We study the precession of perihelia in the Fisher metric. Fisher metric is the solution of the Einstein's Equations with a massless scalar field as a coupling. We find an expression for the precession of perihelia in this metric. This expression contains general relativistic term for the precession of the perihelia and also an additional term which depends on the scalar field. Also, we obtain an upper bound on scalar charge σ by using the observational value of the precession of perihelia for the Mercury planet and the discrepancy between this value and the general relativistic value.			
9	**Sara**	**Jamali**	**Ferdowsi University of Mashhad**	**PhDStu**
	Title: On the Cosmology of scalar-Tensor-Vector theory of Gravity. **Abstract:** We consider the cosmological consequences of a special scalar-tensor-vector theory of gravity, known as MOG in the literature, proposed to address the dark matter problem. This theory introduces two scalar fields G(x) and \mu(x), and one vector field \phi_{\alpha}(x), in addition to the metric tensor.Then using the phase space analysis in the flat Friedmann-Robertson-Walker background, we show that the theory possesses a viable sequence of cosmological epochs with acceptable time dependency for the cosmic scale factor. Using a dynamical system approach to solve the non-linear field equations numerically, we calculate the angular size of the sound horizon, i.e. \theta_{\text{s}}, in MOG. We also generalize MOG to find a model that passes the sound-horizon constraint and might produce a viable version of MOG.			
10	**Behnam**	**Javanmardi**	**IPM School of Astronomy**	**PostDoc**
	Title: Probing the isotropy of the distribution of galaxy types in the Local Universe **Abstract:** One of the cornerstones of the standard model of cosmology (and even some alternative models) is the Cosmological Principle (CP) which assumes that on large scales the properties of the Universe is isotropic and homogeneous. The fundamental importance of the CP requires continuous tests of its assumptions as new data across all the sky become available. In this work, we (for the first time) probe the isotropy of the all-sky distribution of galaxy morphological types out to a distance of about 200 Mpc.			
11	**Vahid**	**Kamali**	**Bu-Ali Sina University (BASU)**	**Faculty**
	Title: Measuring the Effect of Warm Tachyon Inflation in the Planck Data			

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	First Name	Last Name	Institute	Status
12	Basem	Ghayour	-	Researcher

Title: The Effect of Gravitational Waves on the Sound Waves

Abstract: There are lot of missions for the direct detection of the gravitational waves (GWs). But unfortunately they are very costly and time consuming. Therefore we may assume another experiment for detection of the GWs. That is considering the eff ect of the GWs on the sound waves in the fluid. The GWs vary the pressure of the fluid by crossing it. The effect of this variation can find by solution of the geodesic equation. Therefore we may detect the e ffect of GWs by measuring this variation.