2021 Chung-Ang University Beyond the Standard Model Workshop

Report of Contributions

https://indico.cern.ch/e/caubsm21

Contribution ID: **1** Type: **not specified**

Superconducting Axion String and Cosmic Background Axion

Monday, 1 February 2021 09:30 (40 minutes)

Presenter: MURAYAMA, Hitoshi (University of California Berkeley (US))

Contribution ID: **2** Type: **not specified**

Hierarchical axion couplings from axion landscape

Monday, 1 February 2021 10:10 (30 minutes)

Presenter: CHOI, Kiwoon

Contribution ID: **3** Type: **not specified**

SU(2) Anomaly for DE Source

Monday, 1 February 2021 11:10 (30 minutes)

I show a possibility that a quintessential axion (with its breaking by the weak SU(2) gauge anomaly) can be the source of dark energy. However, I cannot show why the minimum of the potential is at the zero value for the cosmological constant.

Presenter: KIM, Jihn E. (Kyung Hee University)

Contribution ID: **4** Type: **not specified**

Axion-driven hybrid inflation over a barrier

Monday, 1 February 2021 11:40 (30 minutes)

Presenter: JEONG, Kwang Sik

Contribution ID: **5** Type: **not specified**

Cooling of young neutron stars and dark gauge bosons

Monday, 1 February 2021 14:40 (30 minutes)

The standard cooling scenario in the presence of nucleon superfluidity fits rather well to the observation of the neutron stars. It implies that the stellar cooling arguments could place a stringent constraint on the properties of novel particles. We study in particular the cooling rate induced by dark gauge bosons for very young neutron stars: remnants of Cassiopeia A and SN1987A. The cooling is dominantly contributed either by the nucleon pair breaking and formation in the core or by the electron bremsstrahlung in the crust, depending on the age of the stars and the form of the couplings. We compute how much the cooling curve of the young neutron stars could be modified by the extra dark gauge boson emission and obtain the bound for the dark gauge boson.

Presenter: HONG, Deog Ki (Pusan National University (KR))

Contribution ID: **6** Type: **not specified**

Dark Axion Portal

Monday, 1 February 2021 15:10 (30 minutes)

Presenter: LEE, Hye-Sung (KAIST)

Contribution ID: **7** Type: **not specified**

Hunting for New Physics in Neutrino Oscillation Experiments

Monday, 1 February 2021 16:00 (40 minutes)

The goal of this phenomenology-oriented talk is to highlight some of the manifold ways in which neutrino oscillation experiments contribute to the global search for physics beyond the Standard Model. We will in particular discuss searches for sterile neutrinos (for which there exist some tantalizing but controversial hints), searches for new interactions in an effective field theory context, and searches for dark matter. Moreover, we will highlight the tremendous potential of neutrino "Near Detectors" for probing light and weakly interacting new particles. Throughout the talk, we will also highlight the Standard Model challenges that current and future neutrino oscillation experiments are facing, in particular with regard to precision prediction for neutrino-nucleus interactions.

Presenter: KOPP, Joachim (CERN)

Contribution ID: **8** Type: **not specified**

Neutrino oscillations in a medium

Monday, 1 February 2021 16:40 (30 minutes)

Presenter: CHUN, Eung Jin (Korea Institute for Advanced Study)

Contribution ID: **9** Type: **not specified**

New mechanism for baryon asymmetry and connection with dark matter

Monday, 1 February 2021 17:10 (30 minutes)

Presenter: KANG, Sin Kyu (Seoul-Tech)

Contribution ID: **10** Type: **not specified**

Fun with axions and axion strings

Tuesday, 2 February 2021 09:30 (40 minutes)

Presenter: HOOK, Anson (University of Maryland)

Contribution ID: **11** Type: **not specified**

Exploring the Universe with Dark Light Scalars

Tuesday, 2 February 2021 10:10 (30 minutes)

Presenter: SHIN, Chang Sub (Institute for Basic Science)

Contribution ID: **12** Type: **not specified**

Primordial Black Hole Domination: Dark Matter, Dark Radiation, and Gravitational Waves

Tuesday, 2 February 2021 11:00 (40 minutes)

If even a relatively small number of primordial black holes (PBH) were created in the early universe, they will constitute an increasingly large fraction of the total energy density as space expands. It is thus well-motivated to consider scenarios in which the early universe was dominated by short lived PBH (M < 10ˆ9 grams, t < 1 sec)
whose Hawking radiation produces both the Standard Model radiation bath and other exotic gravitationally coupled species. Within this context, we consider Hawking radiation as a mechanism to produce dark radiation and dark matter. In a PBH dominated era, we find that Schwarzschild Hawking evaporation produces dark radiation at a level ΔNeff~0.03–0.2 for each light and decoupled species of spin 0, 1/2, or 1. During this era, dark matter could also originate as Hawking radiation, although such dark matter candidates must be very heavy (m >10ˆ11 GeV) to avoid overproduction. Furthermore, if the PBH undergo mergers before evaporating, the subsequent population acquires nonzero spin, so the resulting Kerr Hawking radiation efficiently produces gravitons whose contribution to ΔNeff is within the reach of future CMB experiments; such mergers also predict a characteristic spectrum of primordial gravitational waves at high frequencies correlated with the progenitor PBH mass.

Presenter: KRNJAIC, Gordan (Fermilab)

Contribution ID: **13** Type: **not specified**

Small-scale shear: Diffuse subhalos with gravitational waves

Tuesday, 2 February 2021 11:40 (30 minutes)

Presenter: JUNG, Sunghoon (Seoul National University)

Contribution ID: **14** Type: **not specified**

Search for BSM Higgs at the LHC

Tuesday, 2 February 2021 14:40 (30 minutes)

Presenter: YANG, Un-Ki

Contribution ID: **15** Type: **not specified**

Gapped Continuum Dark Matter

Tuesday, 2 February 2021 15:10 (30 minutes)

Presenter: LEE, Seung J. (Korea University)

Contribution ID: **16** Type: **not specified**

Higgs in the Swampland

Tuesday, 2 February 2021 16:00 (40 minutes)

Presenter: CRAIG, Nathaniel (UC Santa Barbara)

Contribution ID: **17** Type: **not specified**

Invertible LHC Simulations with Generative Networks

Tuesday, 2 February 2021 16:40 (40 minutes)

Presenter: PLEHN, Tilman

Contribution ID: **18** Type: **not specified**

The weak scale as a trigger

Tuesday, 2 February 2021 17:20 (30 minutes)

Presenter: KIM, Hyung Do (Seoul National University)

Contribution ID: **19** Type: **not specified**

EFTs and Inflation

Wednesday, 3 February 2021 09:30 (40 minutes)

Presenter: BURGESS, Clifford Peter (McMaster University (CA))

Contribution ID: **20** Type: **not specified**

Leptogenesis in Higgs inflation

Wednesday, 3 February 2021 10:10 (30 minutes)

Presenter: PARK, Seong Chan (Yonsei University)

Contribution ID: **21** Type: **not specified**

Cosmological Particle Production and Pairwise Hotspots on the CMB

Wednesday, 3 February 2021 11:00 (40 minutes)

Presenter: TSAI, Yuhsin (Fermilab/Cornell)

Contribution ID: **22** Type: **not specified**

Quantum aspects of inflationary GWs

Wednesday, 3 February 2021 11:40 (30 minutes)

Presenter: GONG, Jinn-Ouk

Contribution ID: **23** Type: **not specified**

Detecting Super-Light Dark Matter with Graphene Josephson Junction

Wednesday, 3 February 2021 14:40 (30 minutes)

Presenter: PARK, Jong-Chul

Contribution ID: **24** Type: **not specified**

Dark matter particles and neutrinos with NaI(Tl) crystal detectors

Wednesday, 3 February 2021 15:10 (30 minutes)

Presenter: HA, Chang Hyon (Chung-Ang University)

Contribution ID: **25** Type: **not specified**

Spontaneous breaking of Weyl quadratic gravity to Einstein action and inflation

Wednesday, 3 February 2021 16:00 (40 minutes)

Presenter: GHILENCEA, Dumitru (IFIN-HH (RO))

Contribution ID: **26** Type: **not specified**

Toward waveform modelings for gravitational waves from black hole encountering

Wednesday, 3 February 2021 16:40 (30 minutes)

Presenter: KANG, Gungwon (KISTI)

Contribution ID: **28** Type: **not specified**

Extreme Testing of Self-Interacting Dark Matter

Monday, 1 February 2021 14:00 (40 minutes)

Presenter: YU, Hai-Bo (University of California, Riverside)

Contribution ID: **29** Type: **not specified**

Double Higgs production at the HL-LHC

Tuesday, 2 February 2021 14:00 (40 minutes)

Presenter: KONG, K.C. (University of Kansas)

Contribution ID: **30** Type: **not specified**

Inelastic DM models with Dark Higgs boson

Wednesday, 3 February 2021 14:00 (40 minutes)

Presenter: KO, Pyungwon (Korea Inst. for Advanced Study (KIAS))