Working Group Meeting of COST Action COSMIC WISPers (CA21106)

Report of Contributions

https://indico.cern.ch/e/1485348

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

Scaling in axion string networks

Thursday, February 13, 2025 11:30 AM (45 minutes)

In the post-inflationary axion scenario, axions are produced by axion strings. A crucial parameter for the prediction of the axion dark matter mass is the length per unit volume of axion strings at the time of the QCD transition. This can be established only by numerical simulations, which are limited in volume and time, and must be extrapolated to physical values. After a brief history of simulations and the standard extrapolation method ("scaling"), I show results from our latest campaign of simulations. When analysed in the scaling framework, quite precise results are obtained: as measured in the string rest frame, the length density in the radiation era is $1.491(93)/(ct)2$. The importance for extrapolation of measuring the RMS velocity is emphasised. The much larger values for the string density obtained by other groups are due to extrapolations of the slow approach towards the inferred scaling value. Work in progress towards an axion mass prediction in the scaling framework is outlined.

Author: Prof. HINDMARSH, Mark (University of Helsinki, University of Sussex)

Presenter: Prof. HINDMARSH, Mark (University of Helsinki, University of Sussex)

Session Classification: Talks

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

General WISP

Thursday, February 13, 2025 12:15 PM (45 minutes)

Ref: https://inspirehep.net/literature/2176766

Author: Dr VASKONEN, Ville

Presenter: Dr VASKONEN, Ville

Session Classification: Talks

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

Astrophysical signatures of accreting axion stars

Thursday, February 13, 2025 2:30 PM (45 minutes)

Author: SIGL, Guenter

Presenter: SIGL, Guenter

Session Classification: Talks

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

High-frequency gravitational waves shining in photons in Astrophysical magnetic fields

Thursday, February 13, 2025 3:15 PM (45 minutes)

High-frequency gravitational waves (f\gtrsimf⊠˜MHz) are a smoking gun for the existence of exotic physics. In particular, GW backgrounds lying in the high-frequency would allow one to probe inflation, first-order phase transitions, topological defects and primordial black holes. The lack of current and future gravitational wave experiments sensitive at those frequencies leads to the need of employing different indirect techniques. Notably, one of the most promising one is constituted by graviton-photon conversions in magnetic fields. In this talk, I will discuss possible signature of gravitational wave conversions within astrophysical magnetic fields, focusing on the case Galactic B-fields. In this regard, I will illustrate how graviton-to-photon conversions may lead to unexpected imprints in gamma-ray observations in the range of frequencies f\sim10ˆ{9}-10ˆ{26}\,\Hz. Hence, the absence of any significant evidence for a diffuse photon flux induced by gravitational-wave conversions places stringent constraints on the gravitational-wave strain h_c

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Author: LELLA, Alessandro

Presenter: LELLA, Alessandro

Session Classification: Talks

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

NA62: new results

Thursday, February 13, 2025 4:30 PM (45 minutes)

Author: DOBRICH, Babette (Max Planck Society (DE))

Presenter: DOBRICH, Babette (Max Planck Society (DE))

Session Classification: Talks

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

GravNet - A global network for the search of high frequency gravitational waves

Thursday, February 13, 2025 5:15 PM (45 minutes)

Author: GATTI, Claudio (INFN e Laboratori Nazionali di Frascati (IT))

Presenter: GATTI, Claudio (INFN e Laboratori Nazionali di Frascati (IT))

Session Classification: Talks

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

Quantum sensors for axion dark matter

Thursday, February 13, 2025 9:30 AM (45 minutes)

Author: Prof. BAUER, MARTIN (IPPP Durham)

Presenter: Prof. BAUER, MARTIN (IPPP Durham)

Session Classification: Talks

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

Testing the far UV with an axion coupled to photons

Thursday, February 13, 2025 10:15 AM (45 minutes)

After a brief introduction to axions in string theory, discussing their quality and the origin of their couplings, I will review recent progress in understanding their properties in different string theories from type IIB to heterotic string theories. I will show how the discovery of a light ALP — that is, above the QCD line —is incompatible with unification and heterotic string theory. Finally I will discuss our limitations and the questions that remain open.

Author: REIG LOPEZ, Mario (University of Oxford)

Presenter: REIG LOPEZ, Mario (University of Oxford)

Session Classification: Talks

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

WG 1 Report

Friday, February 14, 2025 11:30 AM (15 minutes)

Session Classification: WG Reports

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

WG 2 Report

Friday, February 14, 2025 11:45 AM (15 minutes)

Session Classification: WG Reports

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

WG 3 Report

Friday, February 14, 2025 12:00 PM (15 minutes)

Session Classification: WG Reports

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

WG 4 Report

Friday, February 14, 2025 12:15 PM (15 minutes)

Session Classification: WG Reports

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

WG 5 Report

Friday, February 14, 2025 12:30 PM (15 minutes)

Session Classification: WG Reports

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

New Opportunities for Cosmic WISPers

Friday, February 14, 2025 9:30 AM (45 minutes)

Author: RINGWALD, Andreas

Presenter: RINGWALD, Andreas

Session Classification: Highlights from CA 21106 Community

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

News about PBC

Friday, February 14, 2025 10:15 AM (45 minutes)

Author: JAECKEL, Joerg (ITP Heidelberg)

Presenter: JAECKEL, Joerg (ITP Heidelberg)

Session Classification: Highlights from CA 21106 Community