



Karlsruhe Institute of Technology

ETP Weekly Meeting

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A dark-themed banner for the ETP (Institute of Experimental Particle Physics). On the left, there is a snippet of Python code. In the center, the text 'Institut für Experimentelle Teilchenphysik (ETP)' is written in white. On the right, the ETP logo is displayed, consisting of the letters 'ETP' in a bold, white, sans-serif font, with a stylized circular graphic behind the 'P'. Below the logo, the full name 'Institut für Experimentelle Teilchenphysik' is written in a smaller white font. The background features a network of white lines and dots, a teal world map at the bottom right, and a teal circular graphic at the bottom center.

```
def main(args, config):
    logger.info(args)
    import numpy as np
    np.random.seed(int(config["seed"]))
    import ROOT
    ROOT.PyConfig.IgnoreCommandLineOptions()
    import root_numpy
    import matplotlib as mpl
    mpl.use('Agg')
    import matplotlib.pyplot as plt

    import tensorflow as tf
    logger.debug(tf.__file__)
    tf.set_random_seed(int(config["seed"]))
    from keras import set_session
    tfconfig = tf.ConfigProto()
    tfconfig.gpu_options.allow_growth = True
    set_session(tf.Session(config=tfconfig))

    from sklearn import preprocessing, model_selection
    import keras.models
    from keras.callbacks import ReduceLROnPlateau,
        EarlyStopping, ModelCheckpoint

    # Extract list of variables
```

Institut für
Experimentelle
Teilchenphysik (ETP)

ETP
Institut für Experimentelle Teilchenphysik

New members or status changes

... since the January 29th

- Jan Voß - new PhD student from Hamburg
- Sofia Giappichini - new PhD student from Perugia
- Benedikt Maier (now at IC)
- ...

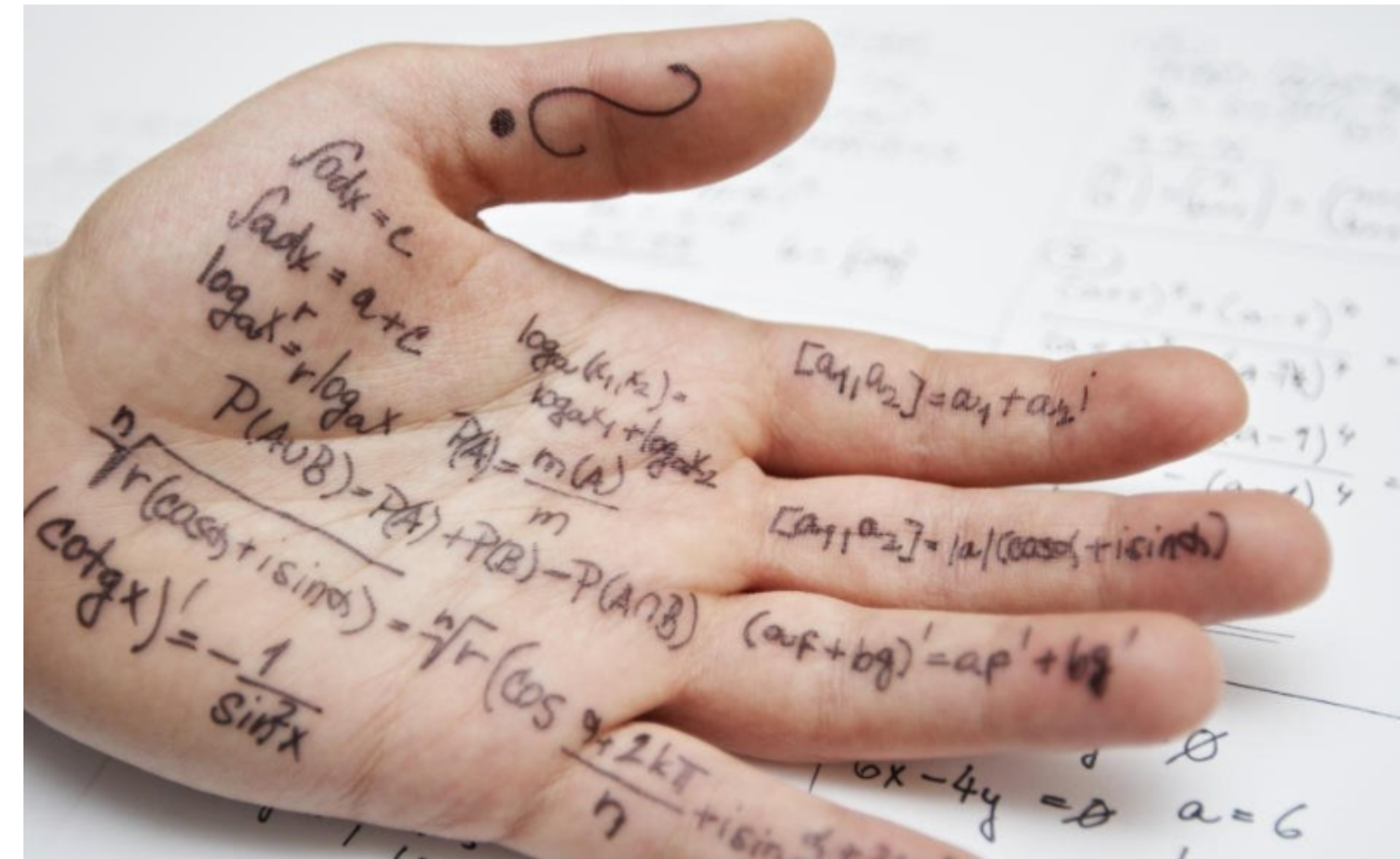
DPG @ KIT

- Many thanks to all helpers!



Proper Scientific Conduct in Education

- We had reports of improper conduct of students in a number of courses last semester
- Cheating results in failing that contribution, e.g. 0 points on homework assignment or lab
- Repeated offences result in failing the course entirely
- Final responsibility for dealing with offences is with the instructor of the course
- Tutors / graders are not asked to police students but need to report improper conduct
- If you are working with an instructor who is not following KIT guidelines, please report to your favourite ETP faculty
- **Our PhD students working as tutors correctly identified such cases and reported this to us**



§ 2 Täuschung während einer schriftlichen oder mündlichen Prüfung

(1) Versucht die Kandidatin, das Ergebnis einer schriftlichen oder mündlichen Prüfung oder Teilprüfung durch Täuschung oder Benutzung nicht zugelassener Hilfsmittel zu beeinflussen, wird die Prüfung als nicht bestanden bewertet.

(2) Wird das Vorliegen eines schwerwiegenden Falls der Täuschung festgestellt, kann die Kandidatin von der Erbringung aller weiteren Prüfungsleistungen ausgeschlossen werden. Als schwerwiegender Fall der Täuschung werden grundsätzlich alle Formen des Plagiats verstanden.

ArXiv - Recent

- Regular addition to our Monday meeting by our PhD students
- ArXiv (hep-ex, hep-ph) review since the last meeting
- 3 highlight papers
 - Titel; Authors; Abstract; Main Result; Why did you find this interesting?
- Subtle or not so subtle encouragement to check on the latest in your field
- <https://arxiv.org/list/hep-ph/recent>
- <https://arxiv.org/list/hep-ex/recent>

arXiv > astro-ph > arXiv:2403.02907

Search...

Help | Advanced

Astrophysics > Cosmology and Nongalactic Astrophysics

[Submitted on 5 Mar 2024]

The Future of Primordial Black Holes: Open Questions and Roadmap

Antonio Riotto, Joe Silk


We discuss some of the the open questions and the roadmap in the physics of primordial black holes. Black holes are the only dark matter candidate that is known to actually exist. Their conjectured primordial role is admittedly based on hypothesis rather than fact, most straightforwardly as a simple extension to the standard models of inflation, or even, in homage to quantum physics, more controversially via a slowing-down of Hawking evaporation. Regardless of one's stance on the theoretical basis for their existence, the possibility of primordial black holes playing a novel role in dark matter physics and gravitational wave astronomy opens up a rich astrophysical phenomenology that we lay out in this brief overview.

Comments: LaTeX file, 11 pages. Invited chapter to the book "Primordial Black Holes", Springer 2024, ed. Chris Byrnes, Gabriele Franciolini, Tomohiro Harada, Paolo Pani, Misao Sasaki

Subjects: **Cosmology and Nongalactic Astrophysics (astro-ph.CO)**; General Relativity and Quantum Cosmology (gr-qc); High Energy Physics - Phenomenology (hep-ph)

Cite as: [arXiv:2403.02907](https://arxiv.org/abs/2403.02907) [astro-ph.CO]

(or [arXiv:2403.02907v1](https://arxiv.org/abs/2403.02907v1) [astro-ph.CO] for this version)

<https://doi.org/10.48550/arXiv.2403.02907> 

- Interesting dark matter candidate, i.e. existence seems reasonably compelling
- Open questions: what is the PBH abundance? What mass range? Clustering properties? GW signals?
- Road map for definitively assessing whether PBHs contribute to the dark matter density

KSETA Workshop

- Mar. 13-15 in Wildberg
- Please fill a travel form!



- Please fill in the **travel form** and send it to the secretary of your institute or to me (already signed by a supervisor). This is important even if you are traveling with the KSETA organized bus for insurance reasons.
- On Thursday evening, after dinner, there will be a **campfire with marshmallows and bread on a stick**. I hope to see you also there!
- The rooms will have all the necessary things (such as towels and blankets) but note please that the showers have **no shampoo or shower gel**.
- Here the **bus departure times**:

March 13th, 2024:

8:00 h - Campus North (bus stop "Südtor")

8:30 h - Campus South (intersection of Wolfgang Gaede Str. and Engesserstr.)

March 15th, 2024:

16:30 h - Saronweg 31, 72218 **Wildberg** (Haus Saron)

- <https://indico.scc.kit.edu/event/3745/overview>

Today's Presentation

- Kylian Schmidt: Photon Reconstruction of Axion-Like Particles with GNNs at Beamdump Experiments

