

**MU Programmtag 2016**

# **Report of Contributions**

Contribution ID: 0

Type: **not specified**

## Strategy Session

Contribution ID: 1

Type: **not specified**

## Programm and Future in POF4

*Monday, 12 December 2016 11:00 (30 minutes)*

**Presenter:** BLÜMER, Johannes

**Session Classification:** Strategy-Session

Contribution ID: 2

Type: **not specified**

## Topic 1

*Monday, 12 December 2016 11:30 (30 minutes)*

**Presenter:** SCHÖRNER-SADENIUS, Thomas

**Session Classification:** Strategy-Session

Contribution ID: 3

Type: **not specified**

## Topic 2

*Monday, 12 December 2016 12:00 (30 minutes)*

**Presenter:** MAAS, Frank

**Session Classification:** Strategy-Session

Contribution ID: 4

Type: **not specified**

## Topic 3

*Monday, 12 December 2016 12:30 (30 minutes)*

**Presenter:** DREXLIN, Guido

**Session Classification:** Strategy-Session

Contribution ID: 5

Type: **not specified**

## Studying generalized dark matter interactions with extended halo-independent methods

*Monday, 12 December 2016 14:30 (25 minutes)*

**Abstract:** The interpretation of dark matter direct detection experiments is complicated by the fact that neither the astrophysical distribution of dark matter nor the properties of its particle physics interactions with nuclei are known in detail. I will present a new framework that combines the full formalism of non-relativistic effective interactions with state-of-the-art halo-independent methods to deal with both of these issues in a very general way. This approach makes it possible to analyze direct detection experiments for arbitrary DM interactions independent of astrophysical uncertainties. I will demonstrate that the degeneracy between astrophysical uncertainties and particle physics unknowns is not complete and therefore future direct detection experiments will be able to infer at least some information on the coupling structure of dark matter without the need to make assumptions on its astrophysical distribution.

**Presenter:** KAHLHOEFER, Felix (DESY, Hamburg)

**Session Classification:** Nature of Dark Matter

Contribution ID: 6

Type: **not specified**

## Axion dark matter from topological defects

*Monday, 12 December 2016 14:55 (25 minutes)*

**Abstract:** The axion arises as a pseudo Nambu-Goldstone boson from the spontaneous breaking of a hypothetical global Peccei-Quinn symmetry introduced to provide a solution to the strong CP problem of quantum chromodynamics. Due to the weakness of the coupling with ordinary matters, the axion is regarded as a viable candidate of dark matter of the universe. However, there is a theoretical uncertainty on the determination of the relic abundance of dark matter axions, which comes from a poor understanding of their production mechanism. In particular, the recent analysis of the spectrum of axions radiated from networks of topological defects revealed that axions produced by the defects give significant contributions to the relic cold dark matter abundance if the Peccei-Quinn symmetry is broken after inflation. In this talk, I will report the recent theoretical estimation of the axion dark matter abundance based on the results of field-theoretic lattice simulations of topological defects and discuss its implications for future experimental tests.

**Presenter:** SAIKAWA, Ken'ichi (DESY; Hamburg)

**Session Classification:** Nature of Dark Matter



Contribution ID: 7

Type: **not specified**

## **FUNK dark photon search: status and perspectives**

*Monday, 12 December 2016 15:20 (25 minutes)*

**Presenter:** VEBERIC, Darko (KIT, Karlsruhe)

**Session Classification:** Nature of Dark Matter

Contribution ID: 8

Type: **not specified**

## Dark photon searches at MAMI and MESA

*Monday, 12 December 2016 15:45 (25 minutes)*

**Presenter:** DENIG, Achim (JGU and HIM, Mainz)

**Session Classification:** Nature of Dark Matter

Contribution ID: 9

Type: **not specified**

## Dark matter models with two mediators

*Monday, 12 December 2016 16:10 (25 minutes)*

**Abstract:** A reliable comparison of different dark matter searches requires models that satisfy certain consistency conditions like gauge invariance and perturbative unitarity. These conditions can easily be satisfied in  $U(1)'$  extensions of the Standard Model, where a fermionic dark matter candidate as well as a new  $Z'$  gauge boson obtain their mass from the spontaneous breaking of the  $U(1)'$  by a dark Higgs. These dark matter scenarios contain two mediators, the new gauge boson and the dark Higgs, which can also act as final states in dark matter annihilation. I will discuss

the general framework of consistent dark matter models with two mediators, and then review a class of dark matter models where baryon number is a local gauge symmetry.

**Presenter:** DUERR, Michael (DESY, Hamburg)

**Session Classification:** Nature of Dark Matter

Contribution ID: **10**

Type: **not specified**

# Phenomenology of flavoured dark matter

*Monday, 12 December 2016 16:35 (25 minutes)*

**Presenter:** KAST, Simon (KIT, Karlsruhe)

**Session Classification:** Nature of Dark Matter

Contribution ID: **11**

Type: **not specified**

## **Status and perspectives of LHC physics**

*Monday, 12 December 2016 17:30 (25 minutes)*

**Presenter:** PETERS, Kirsztian (DESY, Hamburg)

**Session Classification:** Session

Contribution ID: 12

Type: **not specified**

## Status and perspectives of FAIR

*Monday, 12 December 2016 17:55 (25 minutes)*

**Presenter:** GIUBELLINO, Paolo (GSI, Darmstadt)

**Session Classification:** Session

Contribution ID: 13

Type: **not specified**

## Status and perspectives of CTA

*Monday, 12 December 2016 18:20 (25 minutes)*

**Presenter:** HINTON, Jim (MPI, Heidelberg)

**Session Classification:** Session

Contribution ID: 14

Type: **not specified**

## Report from MT

*Tuesday, 13 December 2016 09:15 (15 minutes)*

**Presenter:** BEHNKE, Ties (DESY, Hamburg)

**Session Classification:** Networking and policies



Contribution ID: 15

Type: **not specified**

## Report from MML

*Tuesday, 13 December 2016 09:00 (15 minutes)*

**Presenter:** STÖHLKER, Thomas (HI Jena)

**Session Classification:** Networking and policies

Contribution ID: **16**

Type: **not specified**

## Report from KET

*Tuesday, 13 December 2016 09:30 (15 minutes)*

**Presenter:** ZEITNITZ, Christian (University of Wuppertal)

**Session Classification:** Networking and policies

Contribution ID: 17

Type: **not specified**

## Report from KAT

*Tuesday, 13 December 2016 09:45 (15 minutes)*

**Presenter:** WEINHEIMER, Christian (University of Münster)

**Session Classification:** Networking and policies

Contribution ID: **18**

Type: **not specified**

## Report from KHUK

*Tuesday, 13 December 2016 10:00 (15 minutes)*

**Presenter:** MAAS, Frank (JGU and HIM)

**Session Classification:** Networking and policies

Contribution ID: **19**

Type: **not specified**

## Report from KFB

*Tuesday, 13 December 2016 10:15 (15 minutes)*

**Presenter:** BOINE-FRANKENHEIM, Oliver (TU Darmstadt)

**Session Classification:** Networking and policies

Contribution ID: 20

Type: **not specified**

## Gravitational waves

*Tuesday, 13 December 2016 14:00 (45 minutes)*

**Presenter:** NIELSEN, Alex

**Session Classification:** Highlight lectures

Contribution ID: **21**

Type: **not specified**

## The Proton radius

*Tuesday, 13 December 2016 14:45 (45 minutes)*

**Presenter:** POHL, Randolph

**Session Classification:** Highlight lectures

Contribution ID: 22

Type: **not specified**

## **Neutrino production in the sources of the UHECRs and the role of nuclear physics**

*Monday, 12 December 2016 14:30 (25 minutes)*

**Presenter:** FEYDNITCH, Anatoli (DESY, Zeuthen)

**Session Classification:** Neutrino Properties



Contribution ID: 23

Type: **not specified**

## **Testing neutrino mass generation at the GeV scale: Experimental reach versus theoretical predictions**

*Monday, 12 December 2016 14:55 (25 minutes)*

**Presenter:** RASMUSSEN, Rasmus W. (DESY, Zeuthen)

**Session Classification:** Neutrino Properties

Contribution ID: 24

Type: **not specified**

## Testing neutrino properties with IceCube

*Monday, 12 December 2016 15:20 (25 minutes)*

**Session Classification:** Neutrino Properties

Contribution ID: 25

Type: **not specified**

## **Neutrinos in core-collapse supernova nucleosynthesis**

*Monday, 12 December 2016 15:45 (25 minutes)*

**Presenter:** SIEVERDING, Andre (GSI, Darmstadt)

**Session Classification:** Neutrino Properties

Contribution ID: 26

Type: **not specified**

## Testing neutrino properties with KATRIN: Status update

*Monday, 12 December 2016 16:10 (25 minutes)*

**Presenter:** STEIDL, Markus (KIT, Karlsruhe)

**Session Classification:** Neutrino Properties

Contribution ID: 27

Type: **not specified**

## **Future activities of cross-topic "Neutrino properties"**

*Monday, 12 December 2016 16:35 (25 minutes)*

**Presenter:** ALL

**Session Classification:** Neutrino Properties

Contribution ID: 28

Type: **not specified**

## **Relating EDM to fundamental CP-violating parameters**

*Monday, 12 December 2016 14:30 (45 minutes)*

**Presenter:** WIRZBA, Andreas (FZJ)

**Session Classification:** Antimatter

Contribution ID: 29

Type: **not specified**

## Analysis of B $\rightarrow$ K $\tau\tau$ at Belle

*Monday, 12 December 2016 15:15 (30 minutes)*

**Presenter:** WEHLE, Simon (DESY)

**Session Classification:** Antimatter

Contribution ID: **30**

Type: **not specified**

## Analysis of Tauonic B Decays

*Monday, 12 December 2016 15:45 (30 minutes)*

**Presenter:** HECK, Martin (KIT)

**Session Classification:** Antimatter



Contribution ID: 31

Type: **not specified**

## **Discussion forum on new physics in $B \rightarrow X \tau \tau$ decays**

*Monday, 12 December 2016 16:15 (45 minutes)*

**Presenters:** NIEBUHR, Carsten (DESY); BLANKE, Monika (KIT); NIERSTE, Ulrich (KIT)

**Session Classification:** Antimatter

Contribution ID: 32

Type: **not specified**

## What have we learnt from LHC about air showers?

*Monday, 12 December 2016 14:30 (25 minutes)*

**Presenter:** PIEROG, Tanguy (KIT, Karlsruhe)

**Session Classification:** Strongly Interacting Matter

Contribution ID: 33

Type: **not specified**

# **Measurement of quarkonium production at the LHC: from pp to Pb-Pb collisions with insight into the Quark-Gluon Plasma**

*Monday, 12 December 2016 15:45 (25 minutes)*

**Presenter:** ANDRONIC, Anton (EMMI, Darmstadt)

**Session Classification:** Strongly Interacting Matter

Contribution ID: 34

Type: **not specified**

## Hadronic contributions to $g-2$ from lattice QCD

*Monday, 12 December 2016 16:10 (25 minutes)*

**Presenter:** GREEN, Jeremy (DESY, Zeuthen)

**Session Classification:** Strongly Interacting Matter

Contribution ID: 35

Type: **not specified**

## **Underlying event and multiple parton interaction tunes for Monte Carlo event generators**

*Monday, 12 December 2016 14:55 (25 minutes)*

**Presenter:** GUNNELLINI, Paolo (DESY, Hamburg)

**Session Classification:** Strongly Interacting Matter

Contribution ID: 36

Type: **not specified**

## Moving forward with atmospheric charm

*Monday, 12 December 2016 15:20 (25 minutes)*

**Presenter:** TALBERT, James (DESY, Hamburg)

**Session Classification:** Strongly Interacting Matter

Contribution ID: 37

Type: **not specified**

## Discussion of plans and future activities

*Monday, 12 December 2016 16:35 (25 minutes)*

**Session Classification:** Stongly Interacting Matter

Contribution ID: 38

Type: **not specified**

## Higgs Mass Predictions in BSM models

*Monday, 12 December 2016 14:30 (25 minutes)*

**Presenter:** BAGNASCHI, Emanuele (DESY)

**Session Classification:** Origin of Mass



Contribution ID: 39

Type: **not specified**

# The Generic Approach to Higgs Mass Calculations

*Monday, 12 December 2016 14:55 (25 minutes)*

**Presenter:** STAUB, Florian (KIT)

**Session Classification:** Origin of Mass

Contribution ID: 40

Type: **not specified**

## Finite-Volume Scattering and Resonances

*Monday, 12 December 2016 15:20 (20 minutes)*

**Presenter:** HANSEN, Maxwell (Helmholtz Institute)

**Session Classification:** Origin of Mass

Contribution ID: 41

Type: **not specified**

## Theoretical status of the muon $g-2$

*Monday, 12 December 2016 15:40 (25 minutes)*

**Presenter:** NYFFELER, Andreas (Institut für Kernphysik)

**Session Classification:** Origin of Mass

Contribution ID: 42

Type: **not specified**

## Vacuum Stability and the Origin of Mass

*Monday, 12 December 2016 16:05 (25 minutes)*

**Presenter:** HOLLIK, Wolfgang G. (DESY)

**Session Classification:** Origin of Mass

Contribution ID: 43

Type: **not specified**

# Unitarization and Simplified Models for Vector Boson Scattering

*Monday, 12 December 2016 16:30 (25 minutes)*

**Presenter:** SEKULLA, Marco (KIT)

**Session Classification:** Origin of Mass

Contribution ID: 44

Type: **not specified**

## Neutrino Properties

**Presenter:** STEIDL, Markus (KIT)

Contribution ID: 45

Type: **not specified**

## Neutrino Properties

*Tuesday, 13 December 2016 11:00 (15 minutes)*

**Presenter:** STEIDL, Markus (KIT)

**Session Classification:** Wrap-up of parallel sessions

Contribution ID: 46

Type: **not specified**

## Antimatter

*Tuesday, 13 December 2016 11:15 (15 minutes)*

**Presenter:** NIERSTE, Ulrich (KIT)

**Session Classification:** Wrap-up of parallel sessions



Contribution ID: 47

Type: **not specified**

## Origin of Mass

*Tuesday, 13 December 2016 11:30 (20 minutes)*

**Presenter:** WITTIG, Hartmut (JGU)

**Session Classification:** Wrap-up of parallel sessions

Contribution ID: 48

Type: **not specified**

## Strongly interacting matter

*Tuesday, 13 December 2016 11:50 (20 minutes)*

**Presenter:** RITMAN, James (FZJ)

**Session Classification:** Wrap-up of parallel sessions

Contribution ID: 49

Type: **not specified**

## Nature of dark matter

*Tuesday, 13 December 2016 12:10 (20 minutes)*

**Presenter:** EITEL, Klaus (KIT)

**Session Classification:** Wrap-up of parallel sessions