Welcome & Logistics

Jan Põld (DESY), Babette Döbrich (CERN) for the organizers

QED workshop at DESY

Outline

Reminder: This is what you signed up for :-)

PIER QED vacuum birefringence workshop

1-3 November 2015 *DESY Hamburg*
Europe/Berlin timezone

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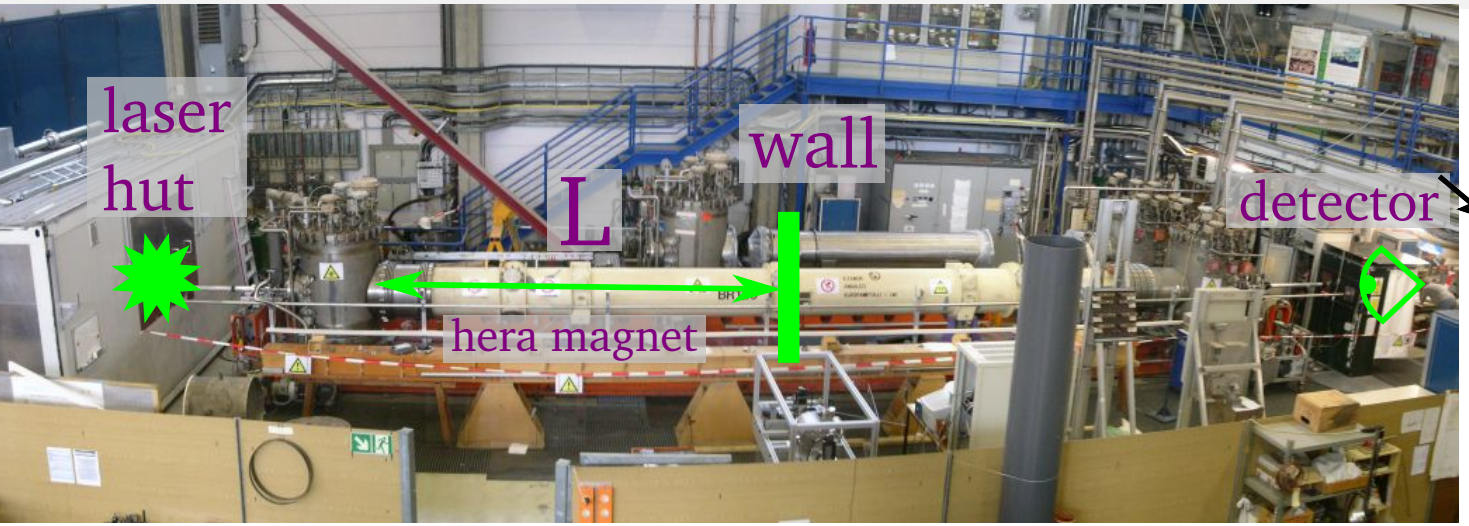
Magnetic birefringence of the vacuum due to electron-positron pairs remains to be measured as one of the fundamental tests of QED.
It has been predicted about 80 years ago but not experimentally measured.
To make the QED effect large, a high magnetic length is preferable.

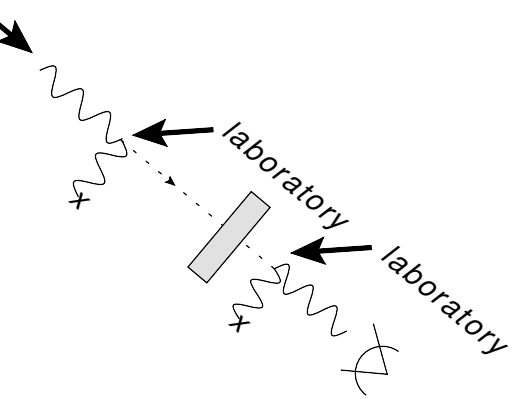
Precision setups like PVLAS (Ferrara), BMV (Toulouse) and OSQAR (CERN) are aiming to measure this fascinating effect. So far a limiting factor is high noise. Experimental progress made in 2015 might be decisive for future efforts.

On the other hand the ALPS-II experiment at DESY is primarily conceived to find axion-like particles. The experiment is currently being set up in a 10m configuration without magnets but we are entering a phase i which more detailed planning of the magnet string is imminent.

In principle, the huge magnetic length of (B^2 L) of ALPS-II of about 2480 T^2m would suggest itself also for a measurement of QED vacuum magnetic birefringence. The technical feasibility of this measurement a DESY is however less clear. Albeit a proposal at FERMILAB 877 aimed to measure this effect with superconducting dipole magnets was put forward but was never performed.

ALPS-II c - an opportunity for VMB - Yes or No?





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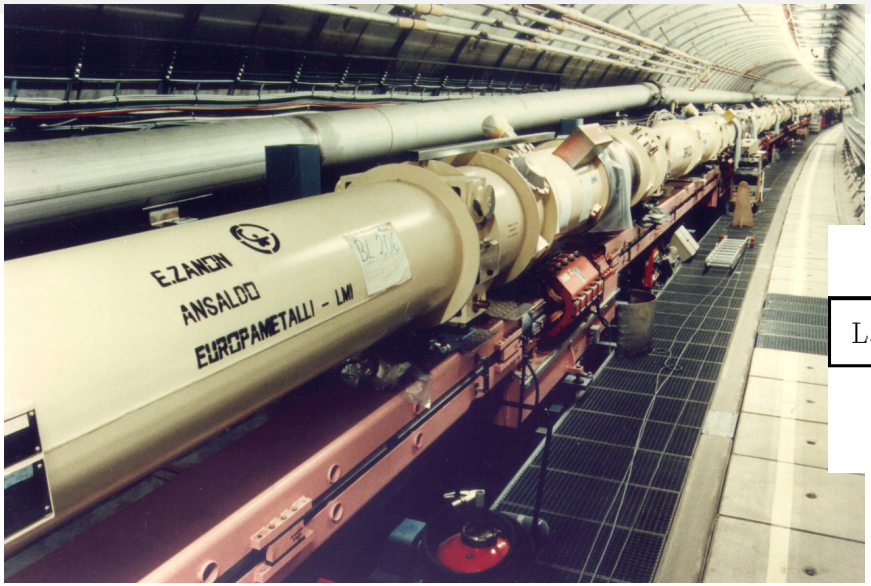

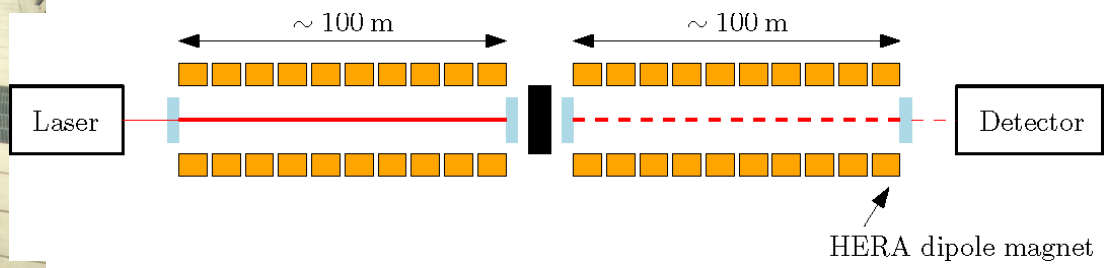

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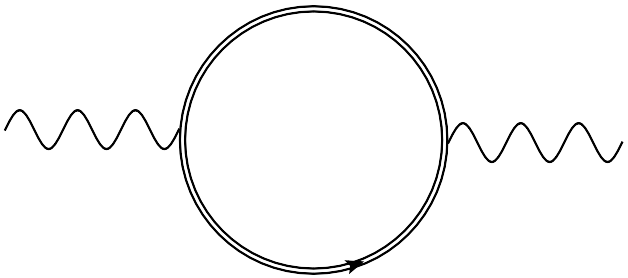

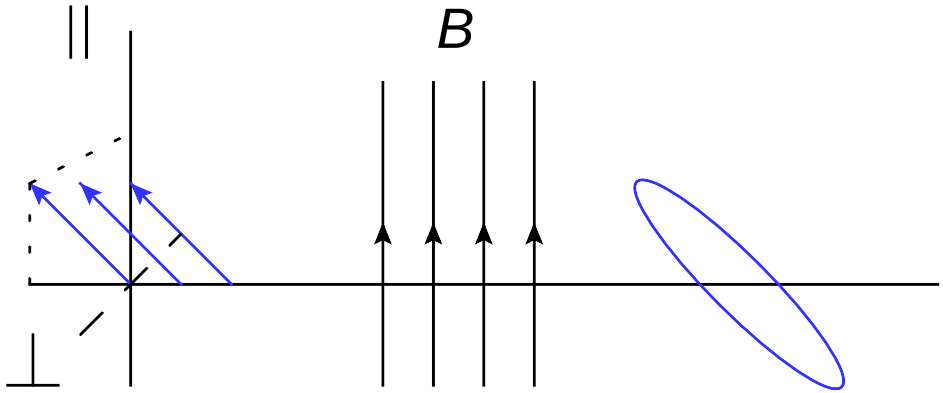

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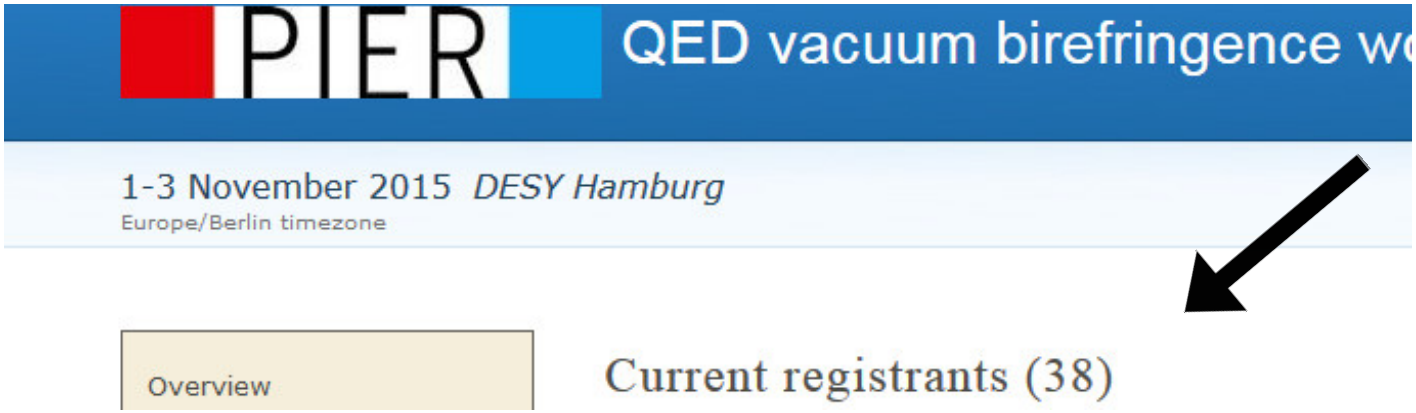

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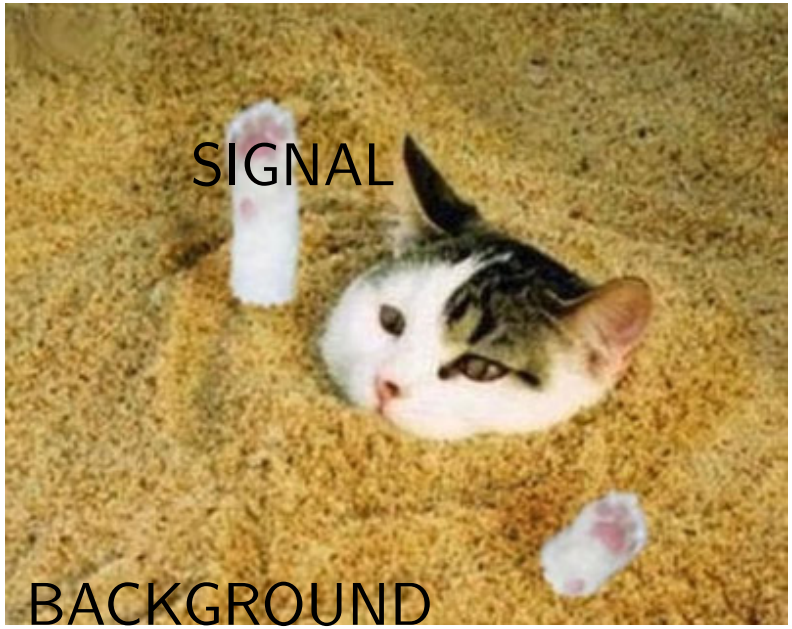
- a lot of activities in this context are ongoing and coming up, we want to learn from you and provide an opportunity for exchange of ideas

VMB @ ALPS-II likely very complicated in practice

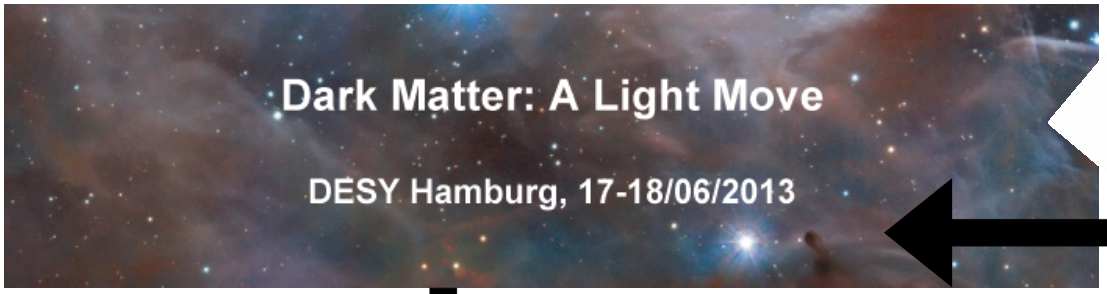


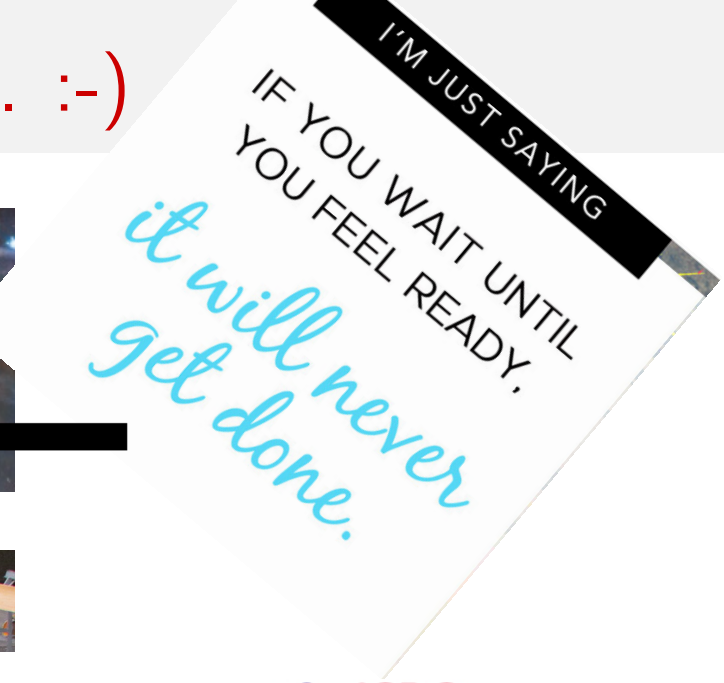
- rotating and pulsed magnets are a popular scheme to 'dig out' the signal in an optical VMB measurement
- what might be interesting for us: scheme not unlike at Fermilab 877
- if there is a possibility, design considerations need to be done in time
- The SFB 676 is kindly sponsoring a small-scale pathfinder experiment in this direction (see Jan's talk), your feedback is sought

Birefringence in different colors...

- Optical probe beam and macroscopic magnet is just one option
- By popular request, we broadened the scope of the workshop to cover many orders of magnitude in the photon energy scale
- This could be a great opportunity for interdisciplinary cross-talk
- To achieve this, we have tried to organize a flexible, very informal workshop, your input/critizism is very much appreciated at any stage (10 min taks/ discussion input still welcome $\rightarrow$ talk to us)

Good record of workshop format... :-)





ICRC
The Astroparticle Physics Conference
34th International Cosmic Ray Conference
July 30 - August 6, 2015
The Hague, The Netherlands

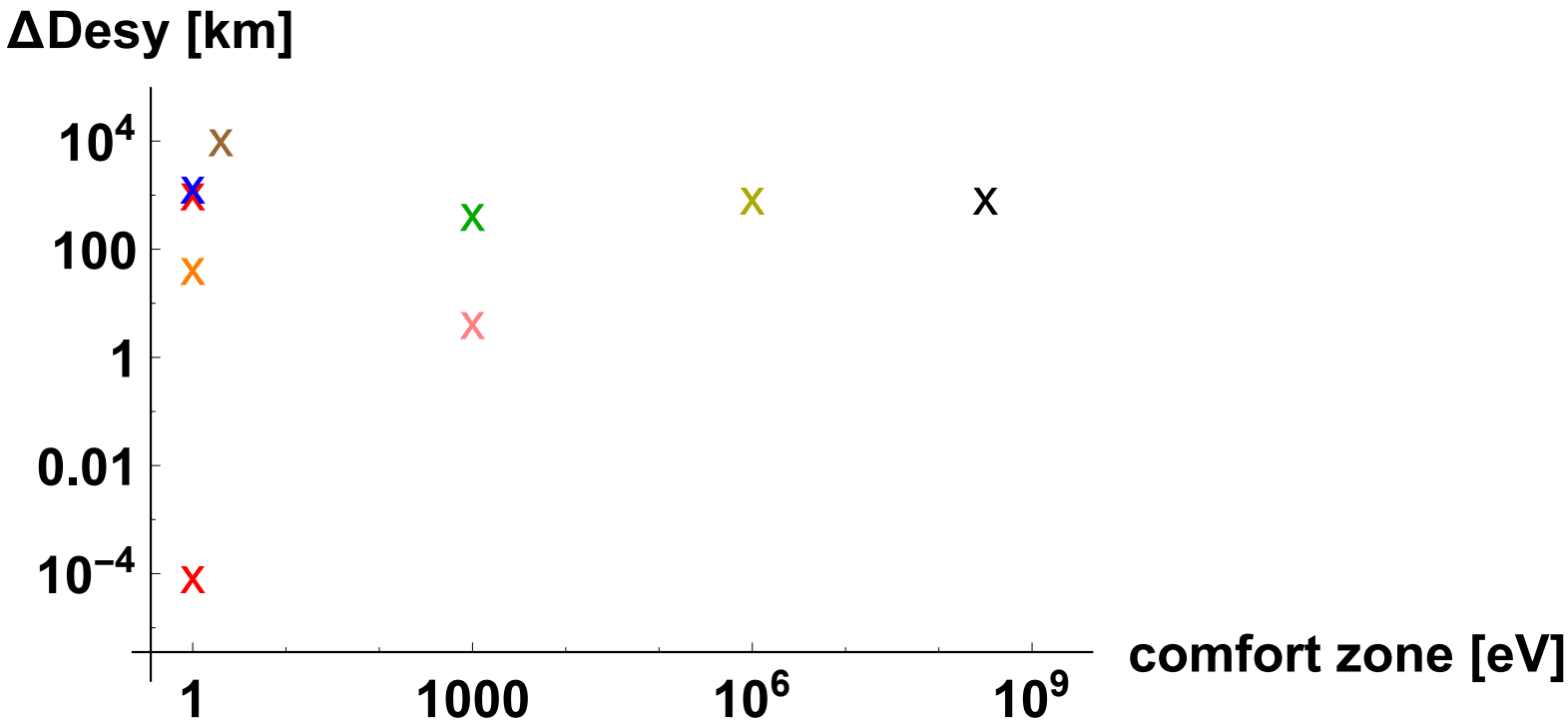
Search for dark matter in the hidden-photon sector with a large spherical mirror

Darko Veberič[*a], Kai Daumiller[a], Babette Döbrich[b], Ralph Engel[a], Joerg Jaeckel[c], Marek Kowalski[d,e], Axel Lindner[d], Hermann-Josef Mathes[a], Javier Redondo[f], Markus Roth[a], Christoph M. Schäfer[a], Ralf Ulrich[a] [The FUNK Experiment]

[a] *Institute for Nuclear Physics, Karlsruhe Institute of Technology (KIT), Germany*
[b] *Physics Department, CERN, Geneva, Switzerland*
[c] *Institute for Theoretical Physics, Heidelberg University, Germany*
[d] *Deutsches Elektronen Synchrotron DESY, Hamburg, Germany*

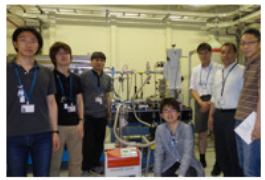
Outline

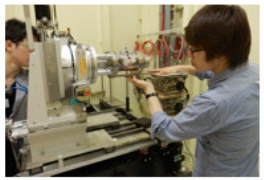
A broad spectrum of participants!

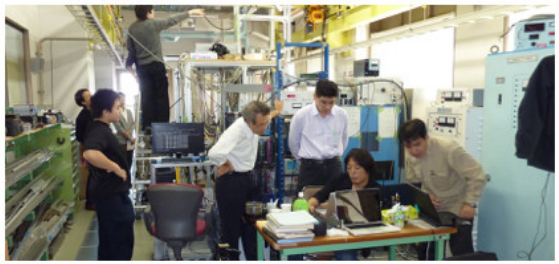


Kindly introduce yourself briefly!, the chart may guide you..

A broad spectrum of participants, part 2

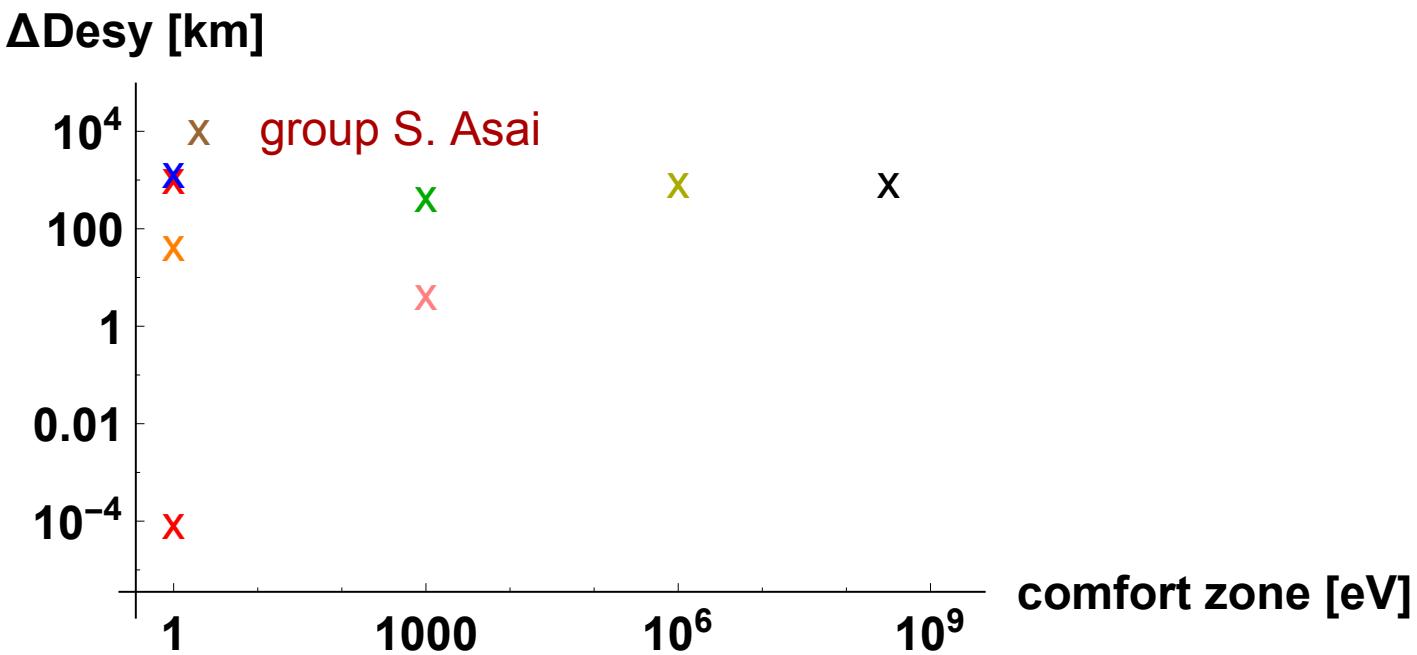






We are a collaboration of Kobayashi lab. (ICEPP) and the Asai lab. (Dept. of Physics) conducting various tabletop experiments in order to search for new physics beyond the standard model.

http://tabletop.icepp.s.u-tokyo.ac.jp/Tabletop_experiments/English_



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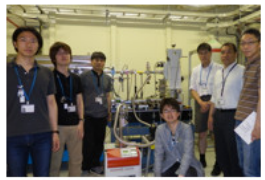
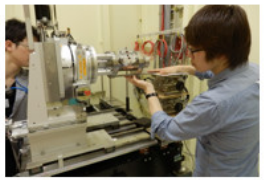
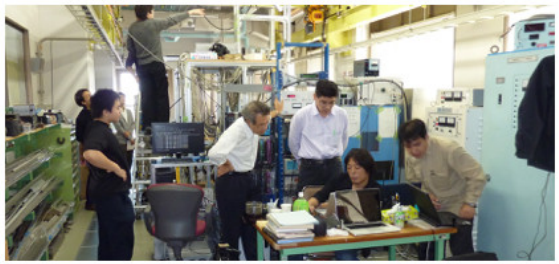

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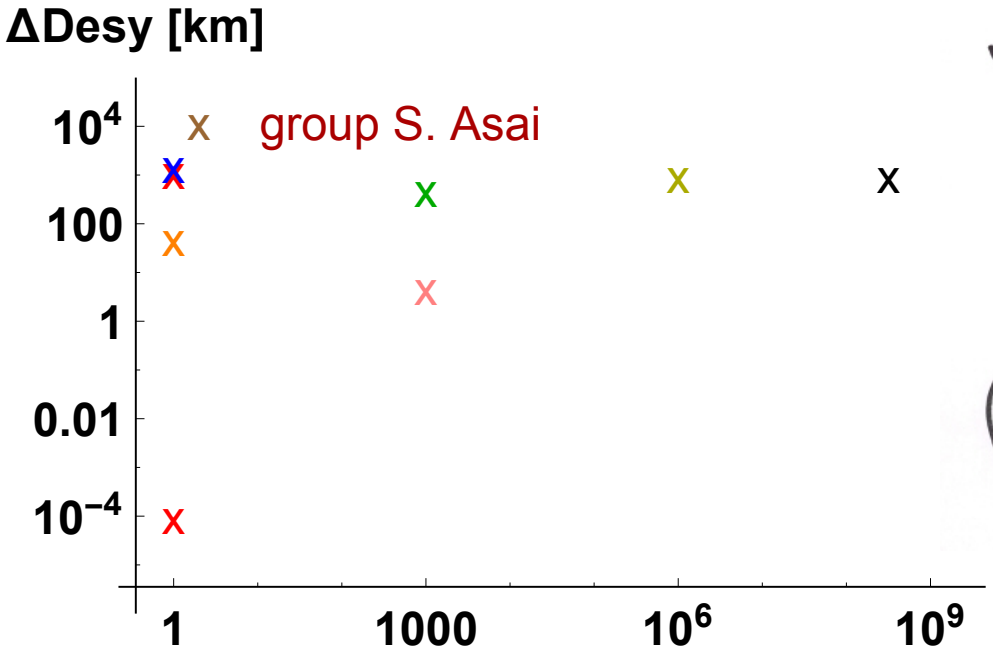
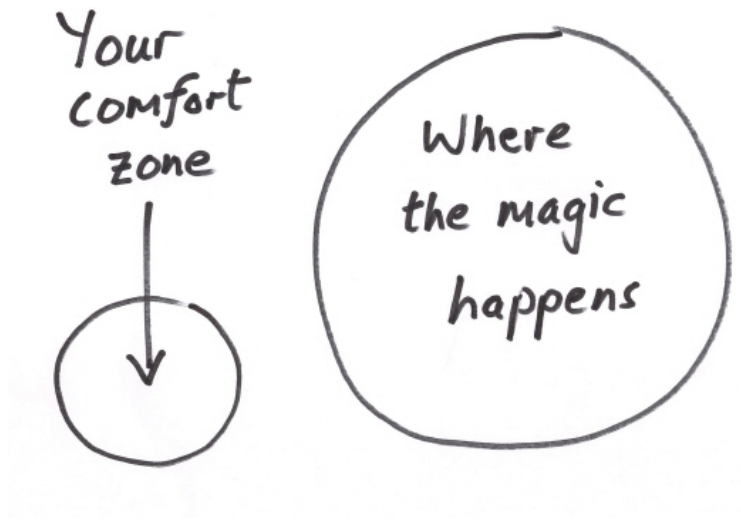
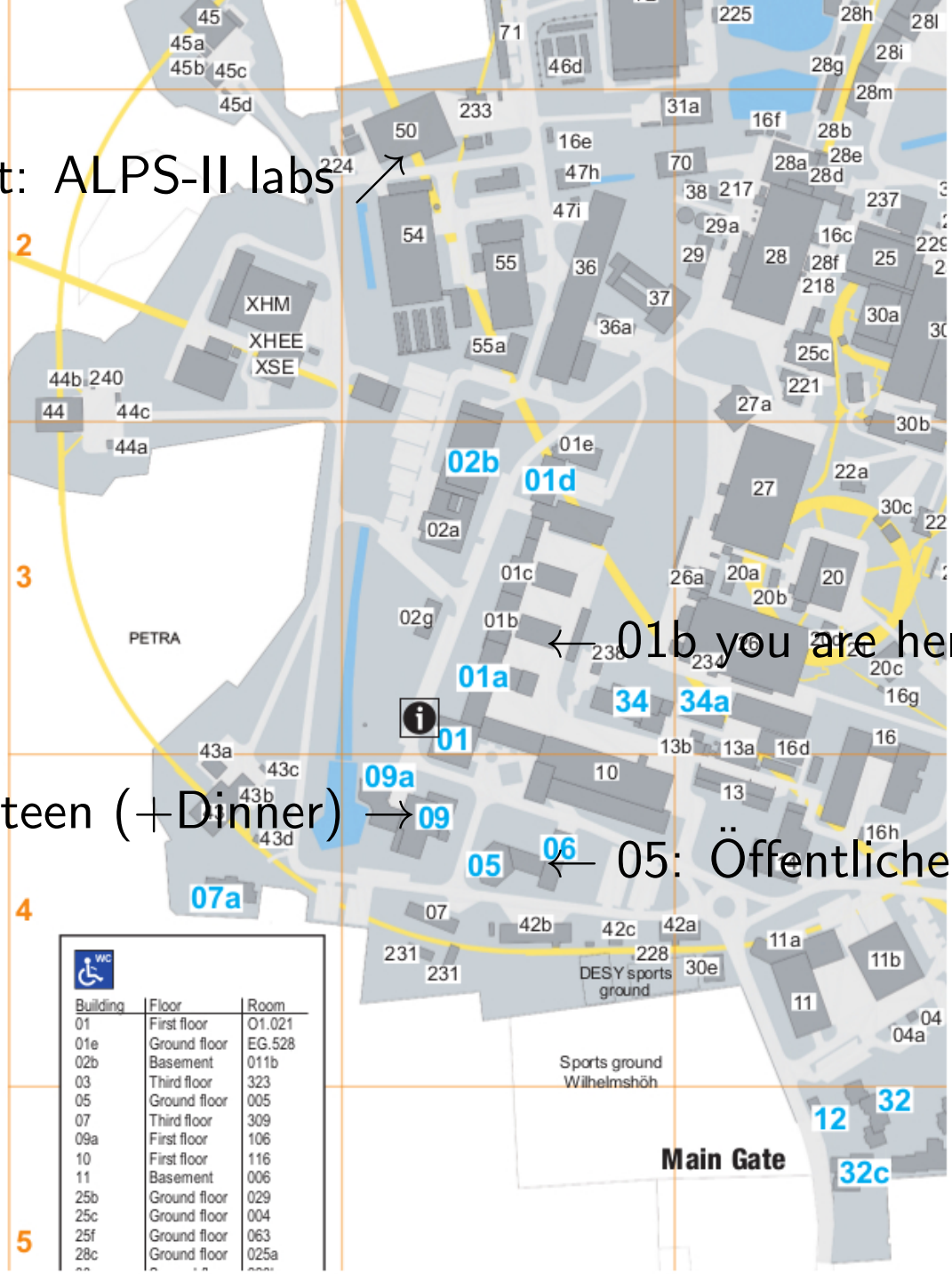




Outline

Premises

50: HERA west: ALPS-II labs ↗



← 01b you are here

09/09a: Canteen (+Dinner) → 09

← 05: Öffentlicher Vortrag (19:00)

Hostel

Let's get started

ALPS guided tour tuesday after round table

Let us know if you interested in participating (small groups for lab)

Lunch & Dinner

we have tables reserved in canteen/bistro, please follow someone who appears knowledgeable

Hostel

Please do not forget to pay for the hostel, if applicable

`indico.desy.de/conferenceDisplay.py?confId=12654`

In principle, you should be able to upload your talk with the same email account that you registered with (but USB sticks are accepted)

In case of trouble

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