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Ultimate Low Light-Level Sensor Development

This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 713171

SiPM Measurements, further cooperation and Database

Andrii Nagai, Unige

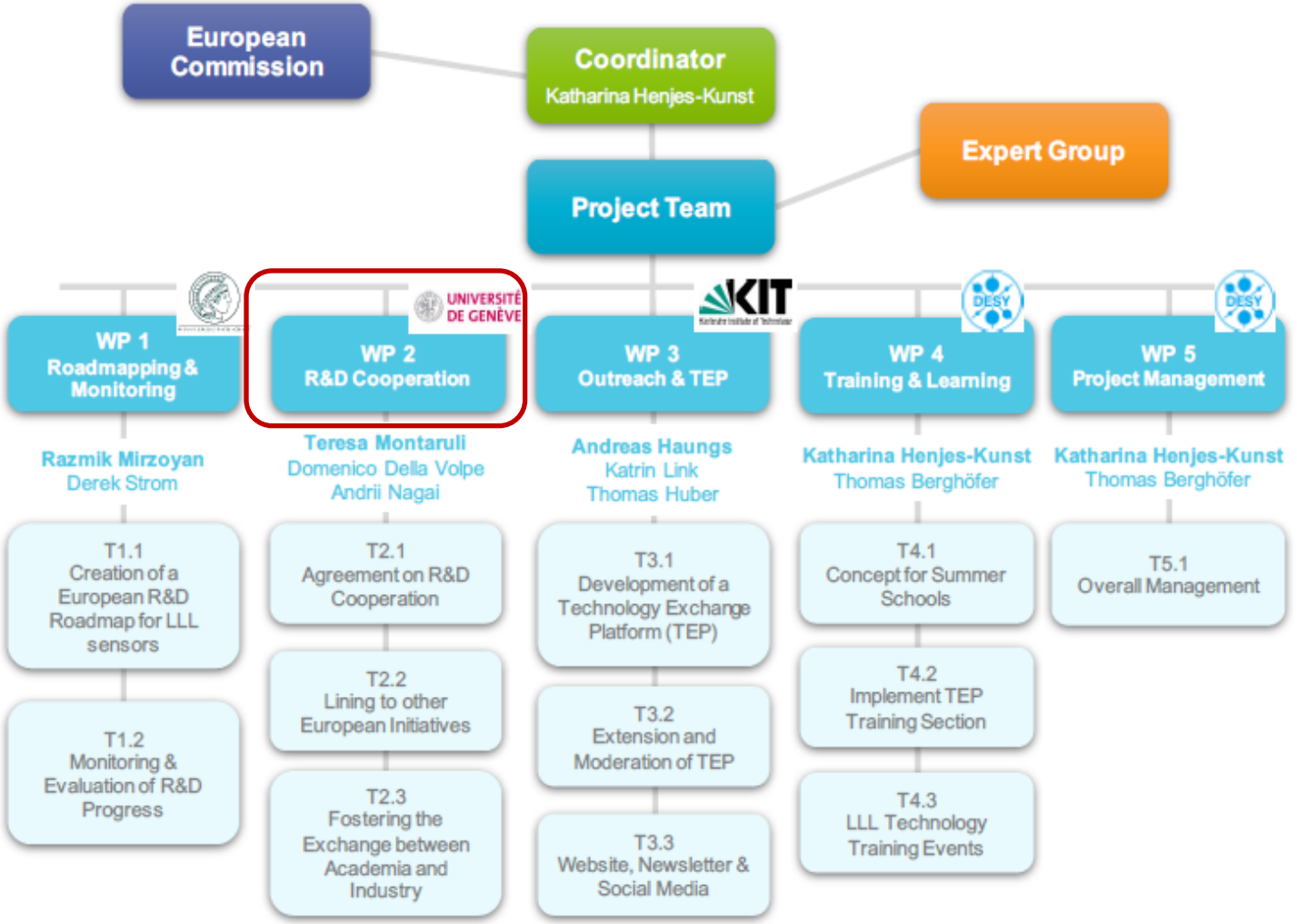
SENSE Structure:

Tasks of WP2:

2.1 Agreement on R&D cooperation between research groups and industry for advancing LLL sensors

2.2 Linking to other European initiatives

2.3 Fostering the exchange between academia and industry



Cooperation agreement:

- University of Geneva, DPNC
- Max-Planck-Institute für Physik (not yet signed)
- KIT-Zentrum Elementarteilchen- und Astroteilchenphysik
- DESY-Zeuthen

SENSE Consortium

- INAF-Osservatorio Astrofisico di Catania
- Heidelberg University
- Institute for Space-Earth Environmental Research, Nagoya University
- The Institute of Cosmos Sciences, University of Barcelona
- The Institut de Física d'Altes Energies
- The Université Libre de Bruxelles
- The Institut de Física Corpuscular, centro mixto del Consejo Superior de Investigaciones Científicas y de la Universitat de València

Crosscheck the measurements:

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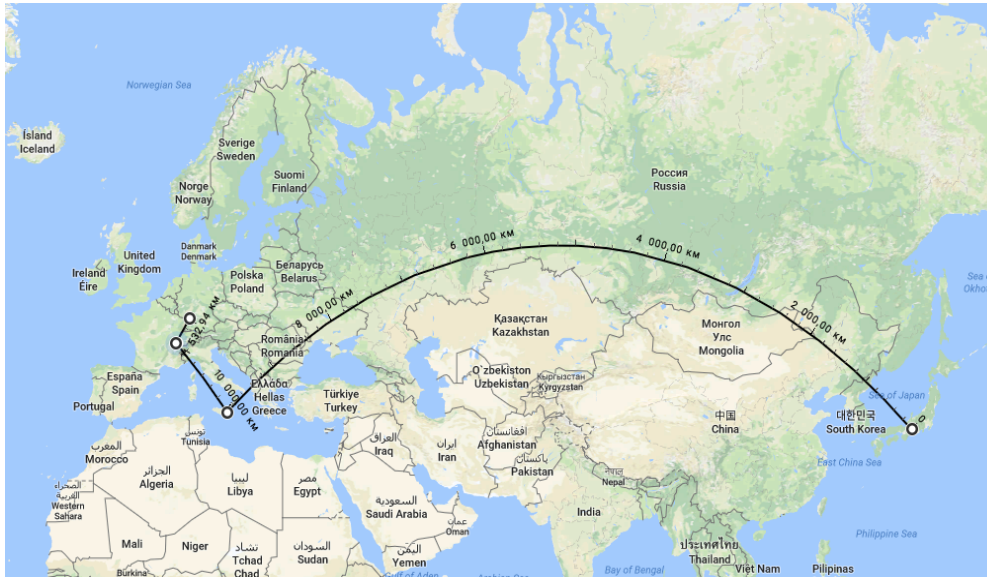
Devices shipments:



Device	Home institute	Destinations:		
		№ 1	№ 2	№ 3
LVR	Nagoya (Japan)	Catania (Italy)	Unige (Switzerland)	KIT (Germany)
Hex. Dev.	Unige (Switzerland)	Nagoya (Japan)	Catania (Italy)	Heidelberg (Germany)
LCT5	Heidelberg (Germany)	Unige (Switzerland)		

- University of Geneva, DPNC
- INAF-Osservatorio Astrofisico di Catania
- Institute for Space-Earth Environmental Research, Nagoya University

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INAF - Osservatorio Astrofisico di Catania

NAGOYA UNIVERSITY
ISEE
INSTITUTE FOR SPACE-EARTH ENVIRONMENTAL RESEARCH

Results:

☺ Was useful for all
☹ Manpower needed;
☹ Regular meetings/discussions

Easier to work in groups of 3 or more participants

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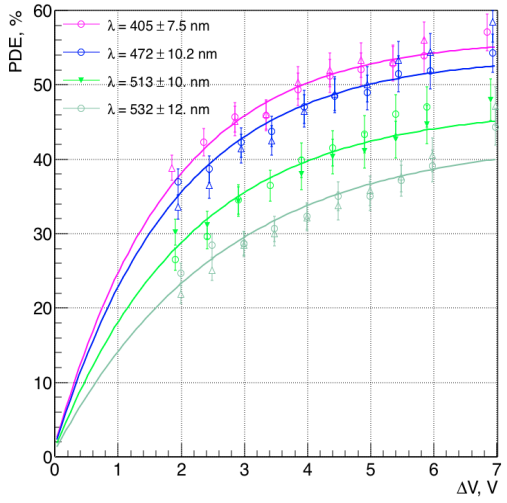
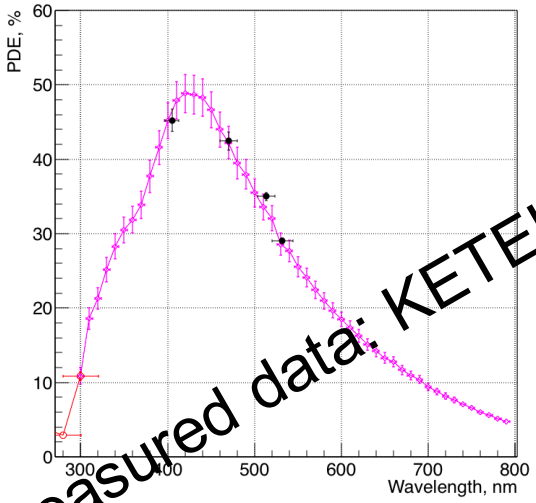
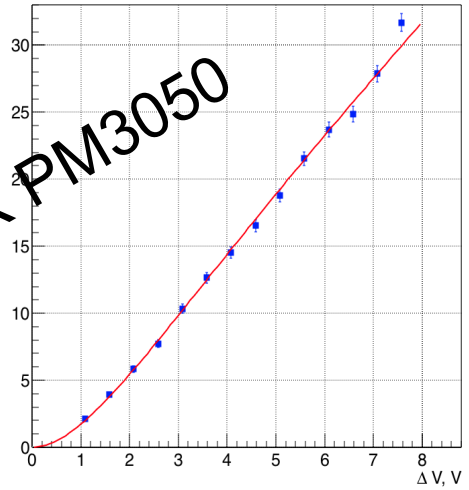
Database: of “latest” SiPM devices:

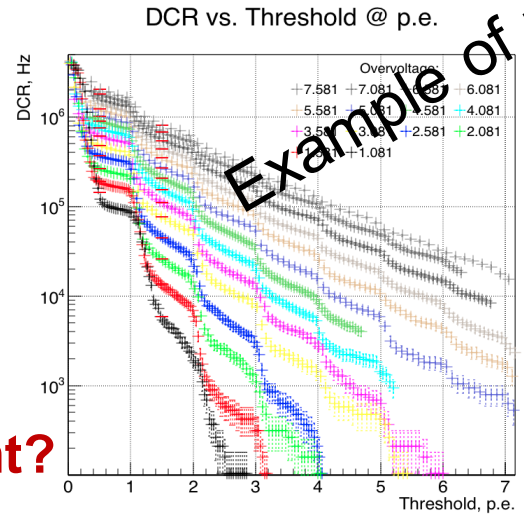
Producer	Devices
FBK/AdvanSiD	RGB 3x3
	NUV 3x3
SensL	MicroFJ-SMTPA-30035
KETEK	PM3050
Hamamatsu	S10943-2832(X)
	S13360-3050CS
	S14520-3050VS
	S14520-6050VS
	S14520-6075VS

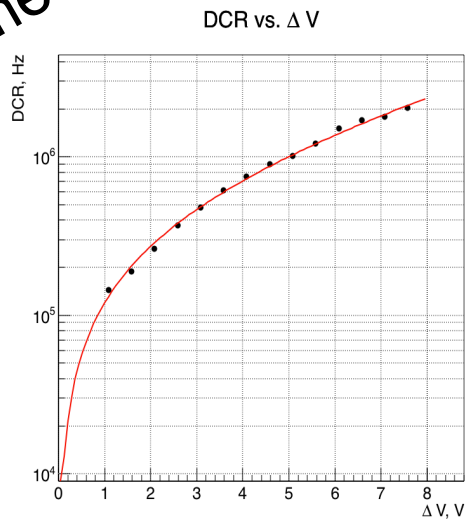






Example of measured data: KETEK PM3050





How and were to store/share/present?
How to extend database?
How to overcome psychological barrier to share non published data?

How and were to store/share/present?

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1. Row DATA (waveforms):
   - ☺ Everyone can reproduce results, test new methods, procedures…
   - ☹ Few GB of data per device;
   - ☹ Useful for small range of users
2. Plots:
   - ☺ Easy to store;
   - ☺ Nice to presents;
   - ☹ Difficult to compare devices and get given values
3. Tables with parameters (PDE, DCR, P_{XT}, etc.):
   - ☺ Easy to compare devices;
   - ☺ Easy to extract necessary numbers;
   - ☹ No visualization
4. As an approximation function of real data:
   - ☺ Easy to store, compare, extract necessary numbers;
   - ☺ Oovercome “psychological barrier” to share non published data
5. Other ideas …

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How to extend and keep on date database?

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1. How to encourage sanitises to share there results in database?

   We can propose to share:

   - Our set-ups;
   - Experience;
   - Analysis procedures…

2. Accept everything or only after reviewing process?
   - We can define “Gold” procedure (ICASIPM working on it)

3. Wait till somebody share there results or contact authors of already existing publication?

4. Other ideas …

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How to overcome psychological barrier to share non published data?

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