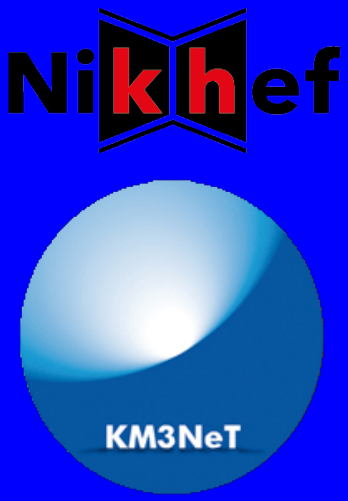
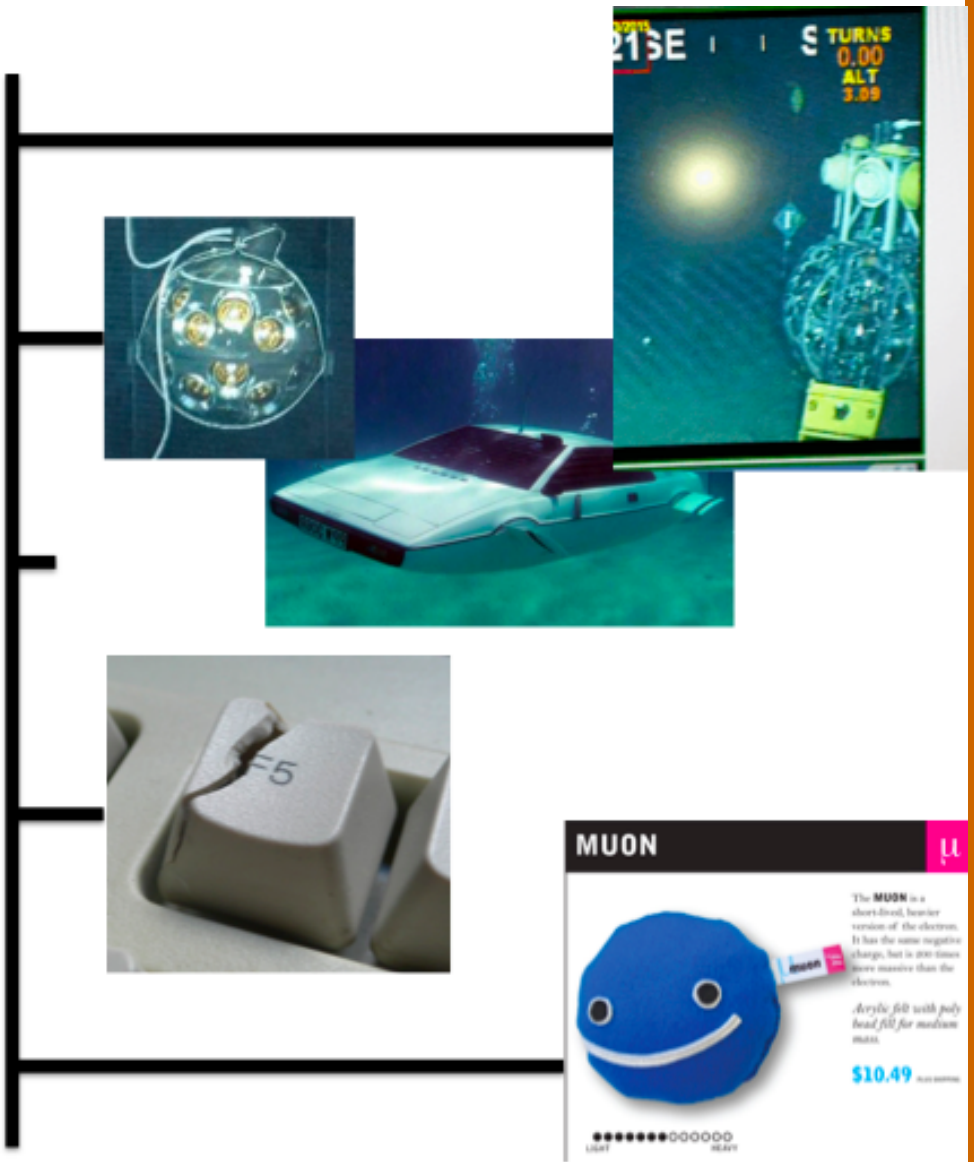
First Data of KM3NeT



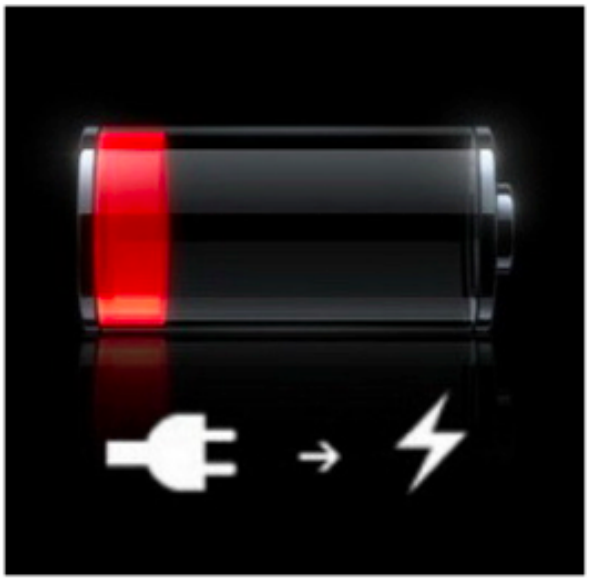
K.W. Melis
Jamboree 2015
December 15, 2015

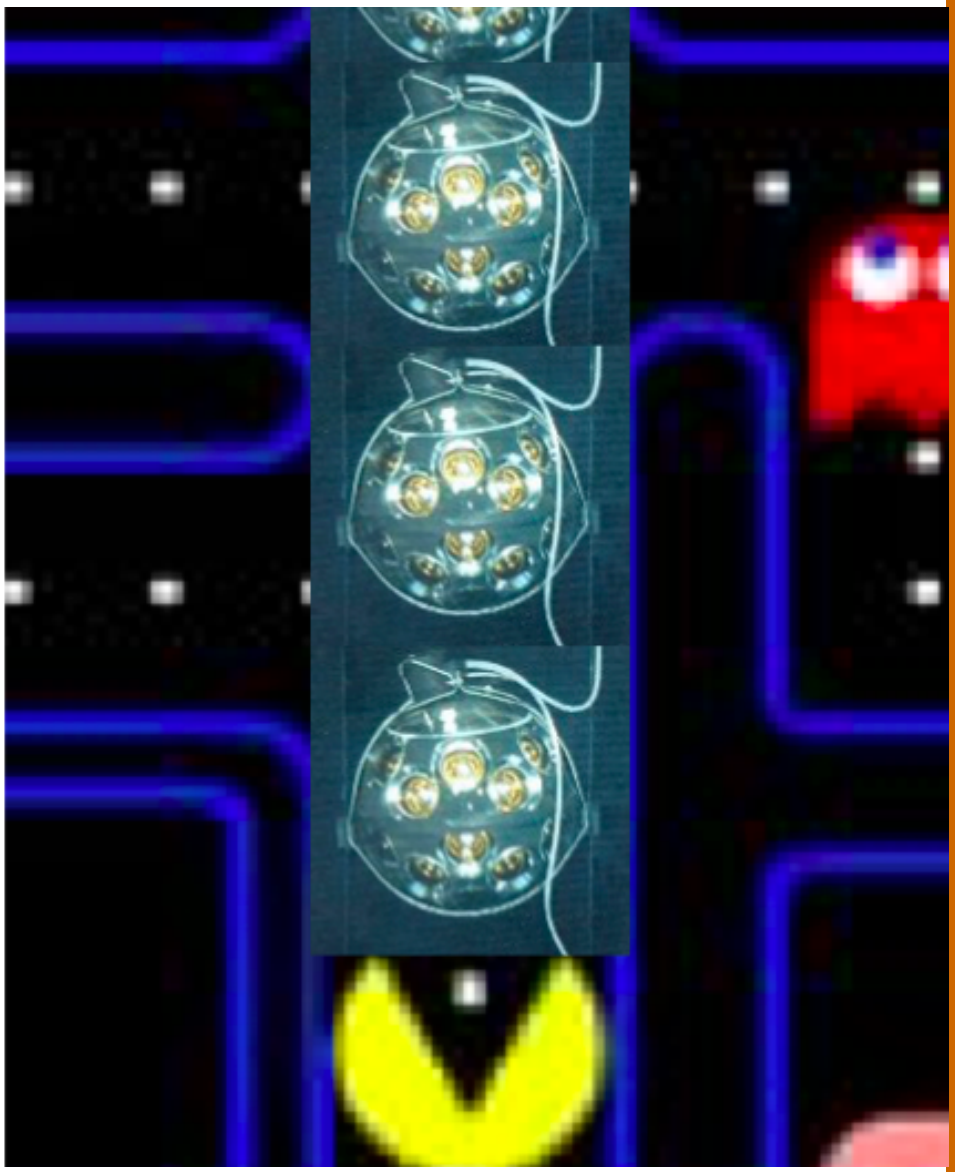
Outline

Deployment	03/12, 09:00h
Inspection	03/12, 18:49h
Power-on	04/12, 09:26h
First data	04/12, 16:52h
First muons	04/12, 17:49h

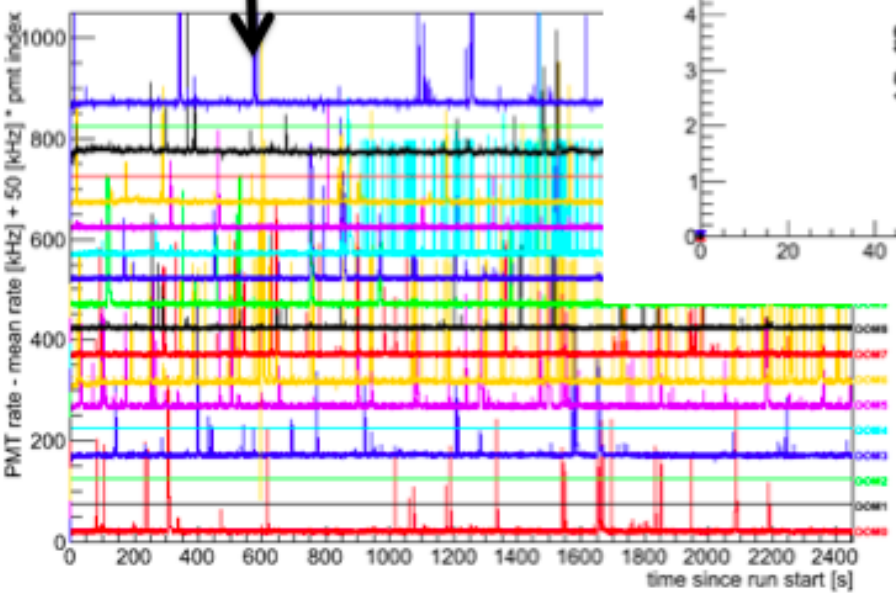


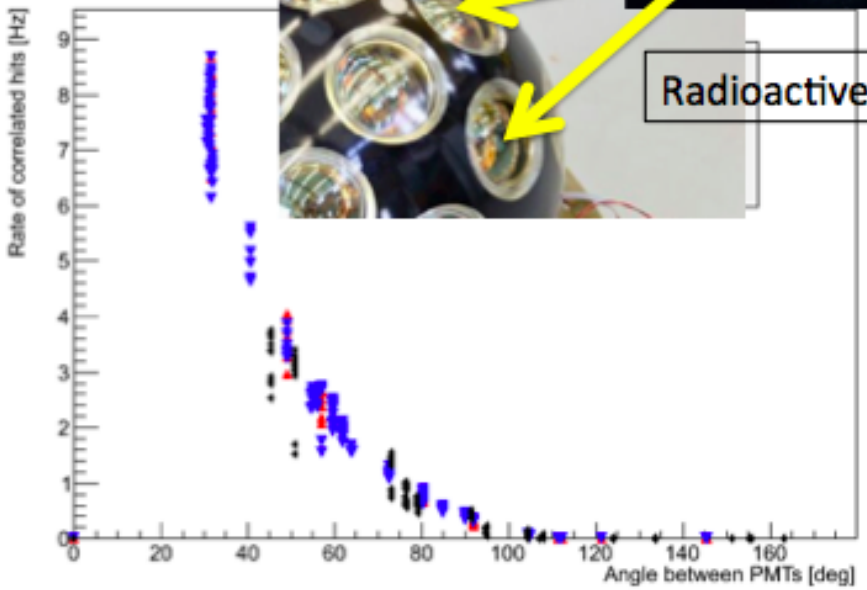
First checks: Does it work?

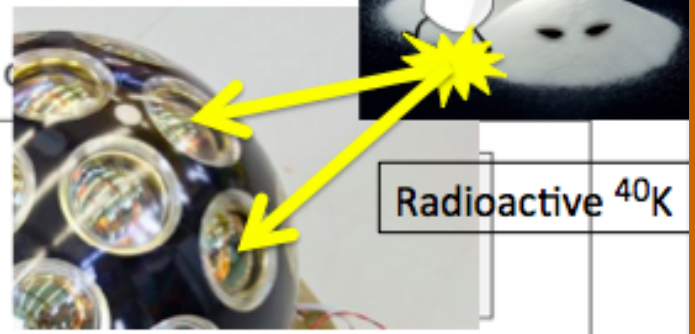




Coincidence rate between PMTs (plots by M. Jongen)

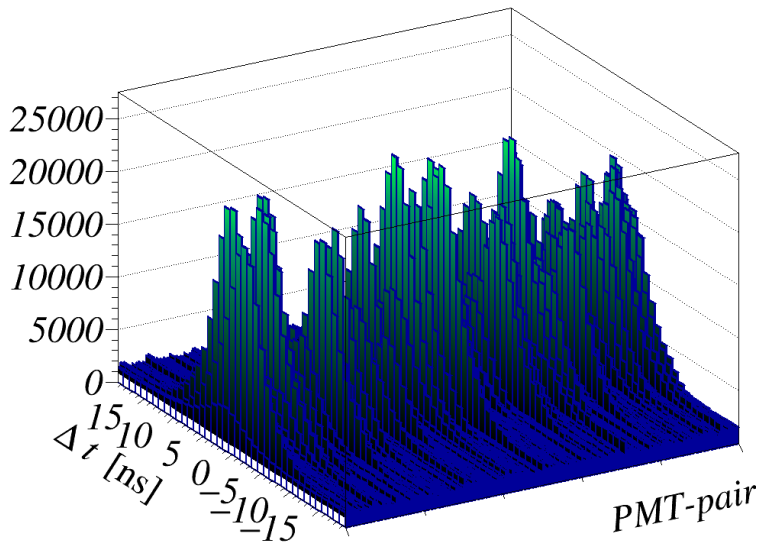






In-situ calibration: PMT level

^{40}K Coincidence rate between PMTs:

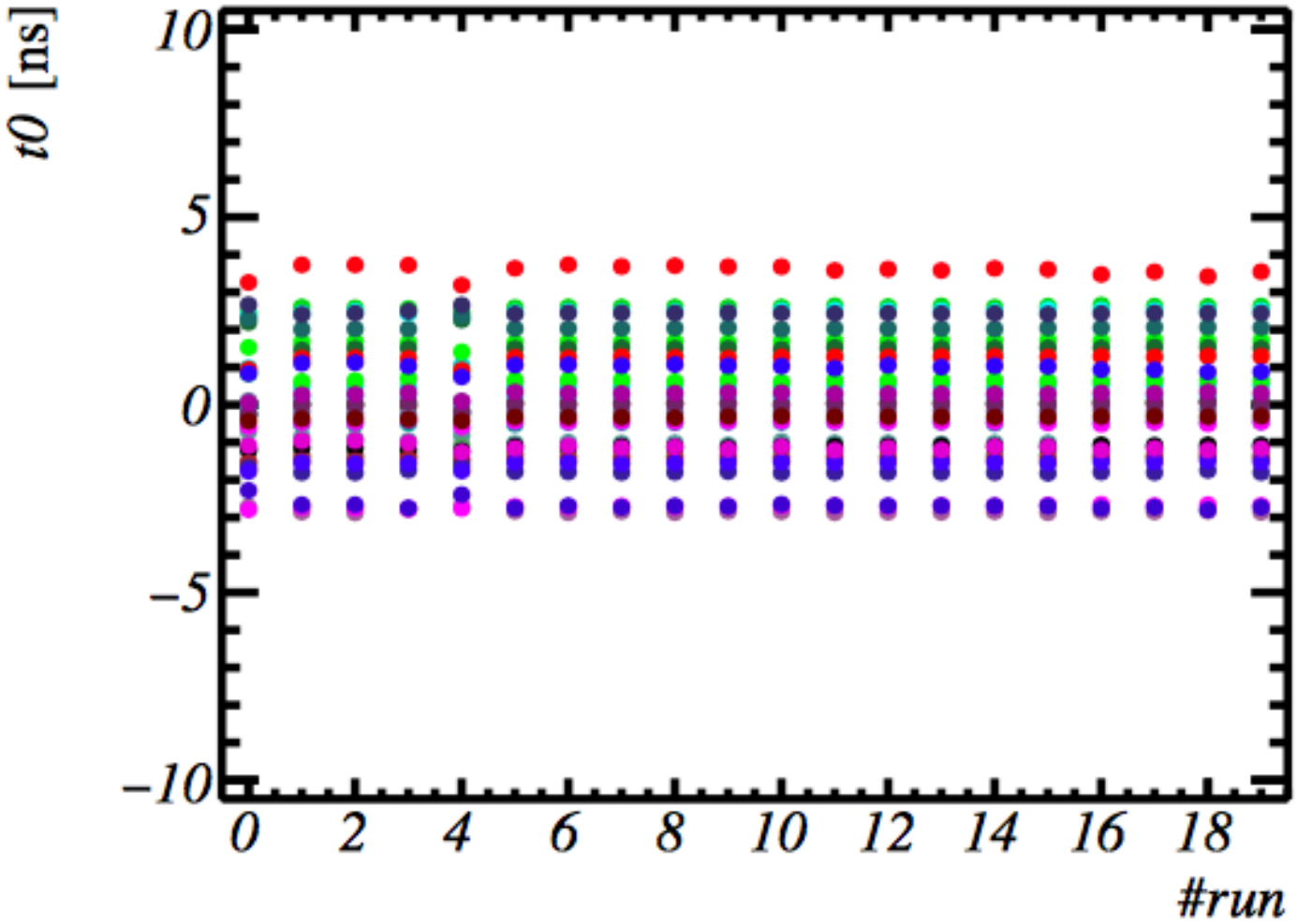


- Simultaneous fit of all PMT characteristics:

- Mean: PMT transit time
- Area: PMT efficiency
- Width: Transit time spread

Data quality

PMT transit times of one DOM:



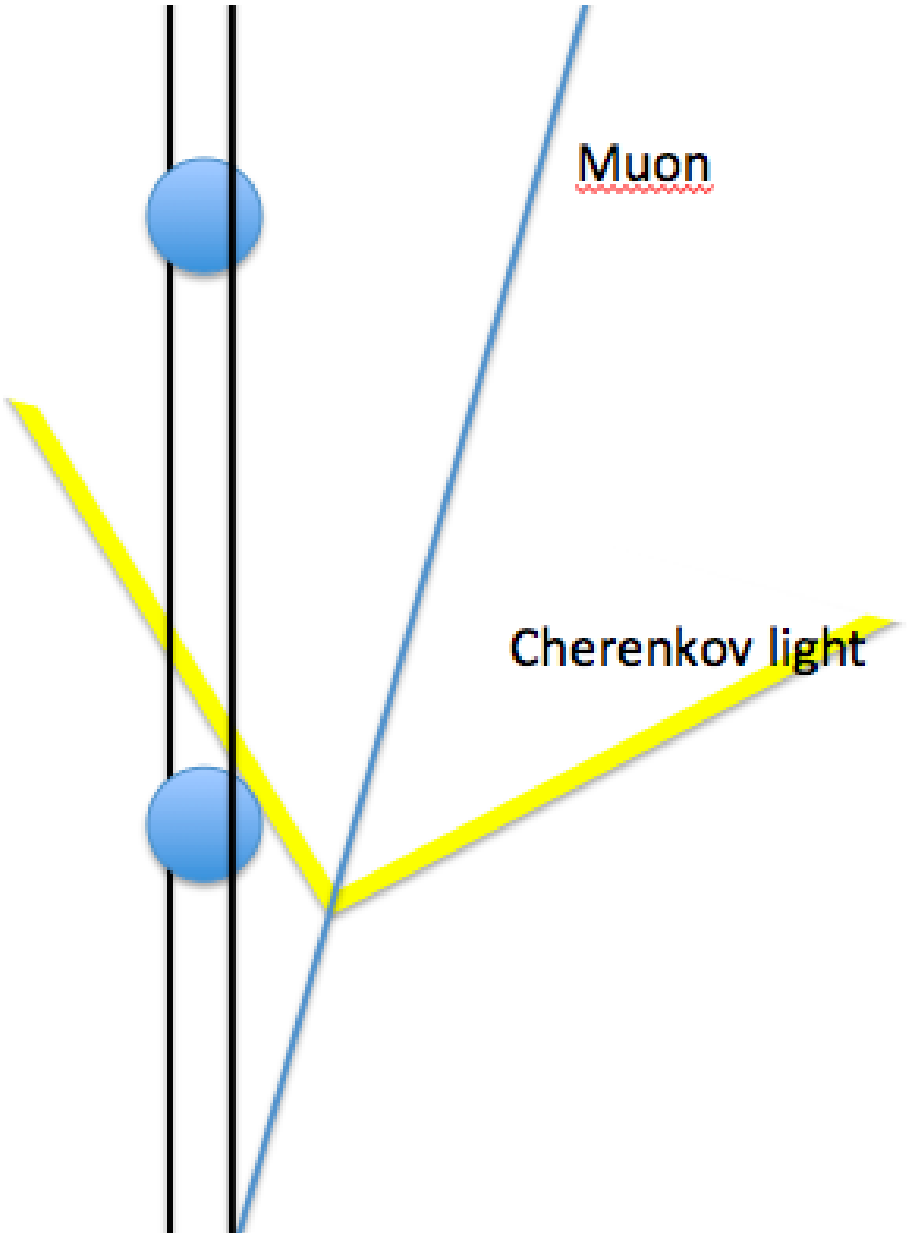
Stable data, sub-ns timing calibration

Outline

KM3NeT

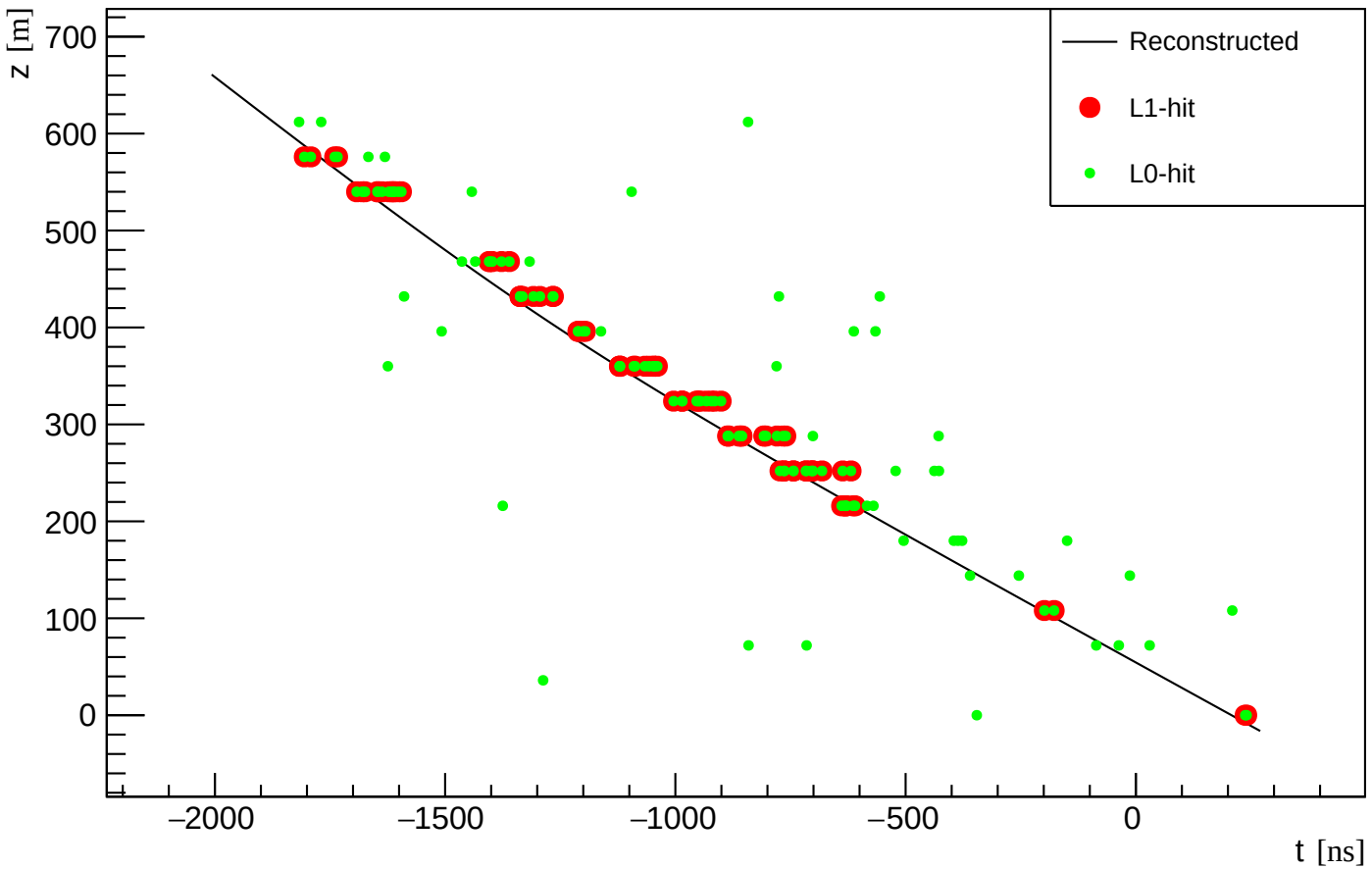
Opens a new window on our universe

Reconstruction: Principle



- Maximum Likelihood approach
- Including
  - Hit times
  - DOM hit/not hit
- Excluding:
  - PMT-level information

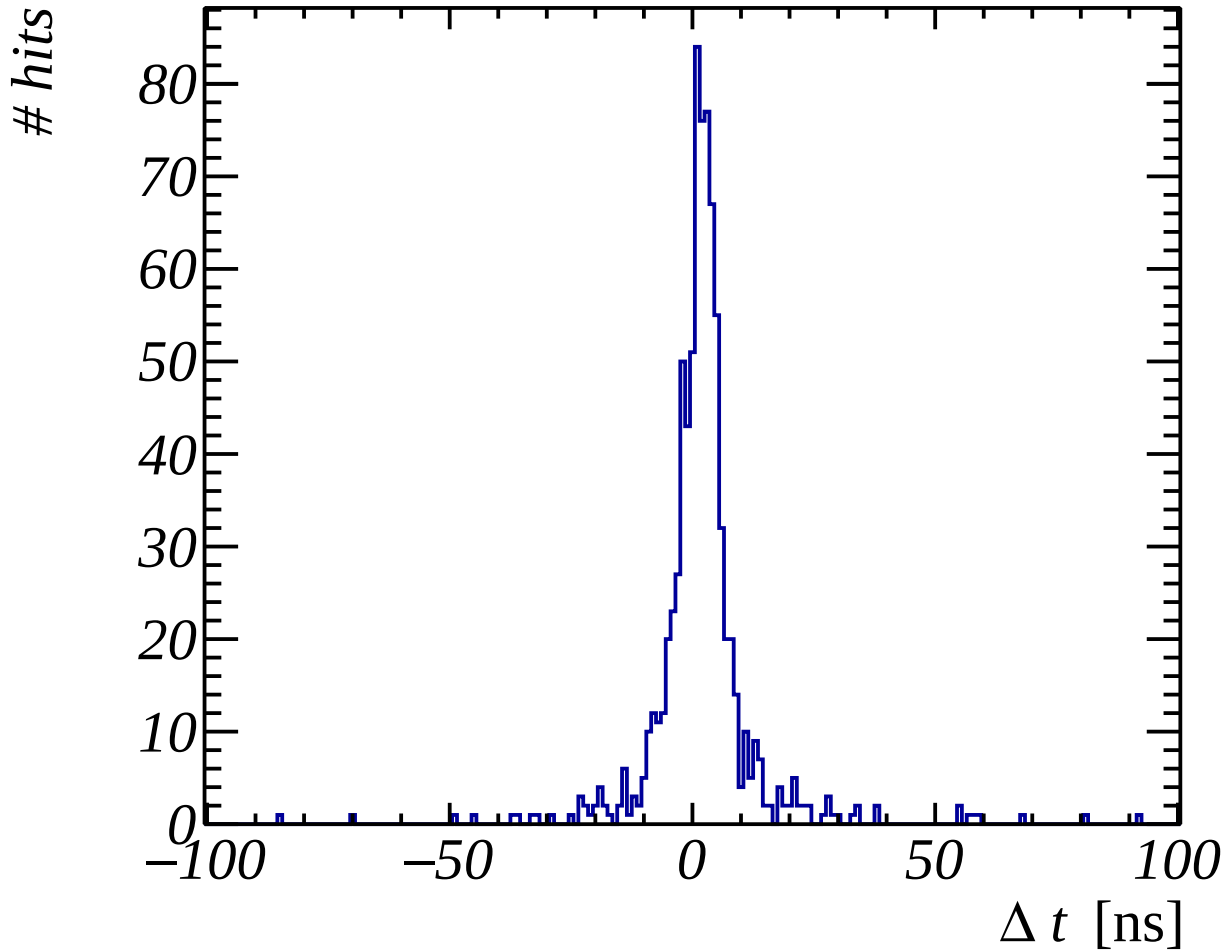
First muons seen with KM3NeT



One day after power-on, one hour after first data

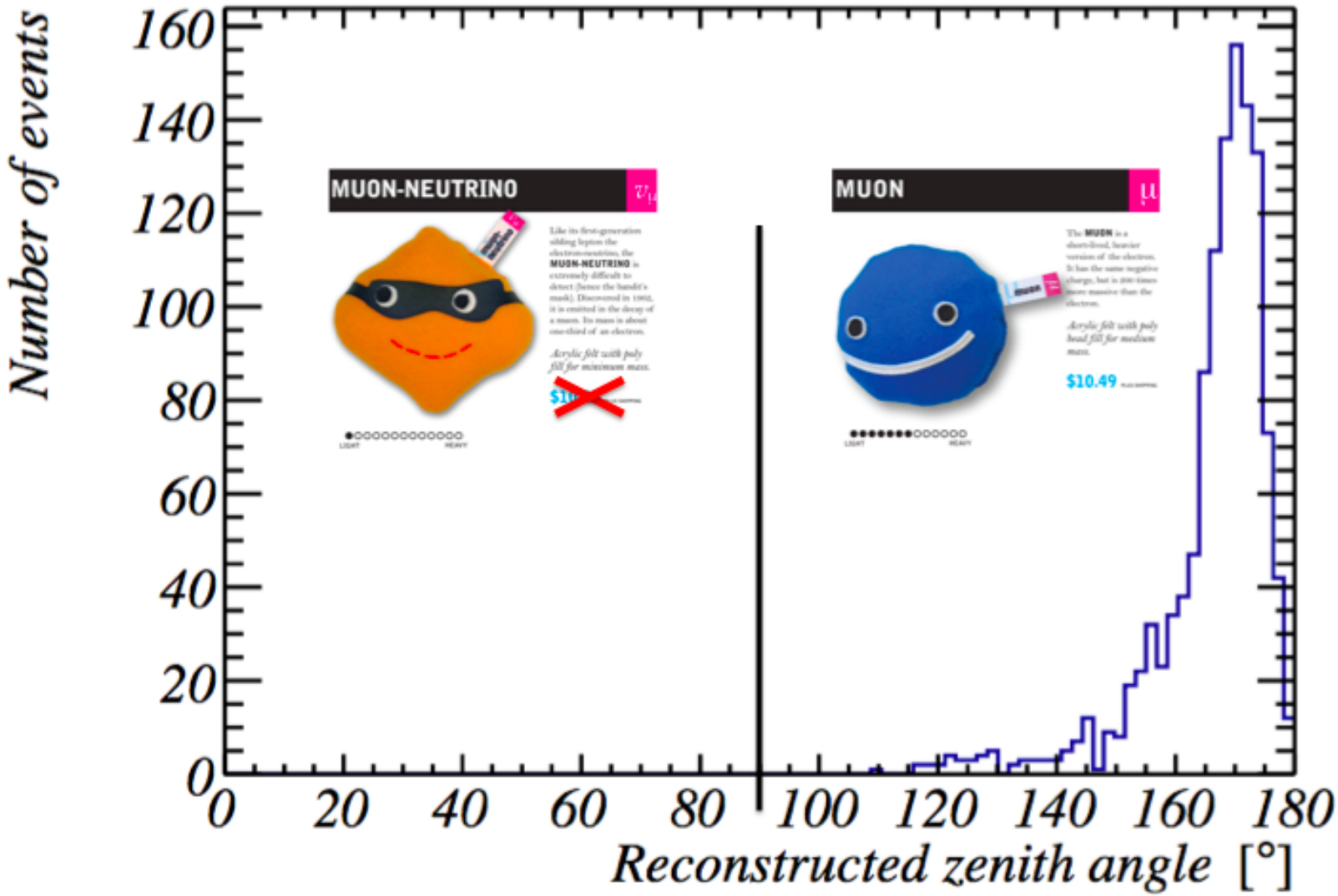
First results: Time residuals

Difference between measured and expected hit time on one DOM:

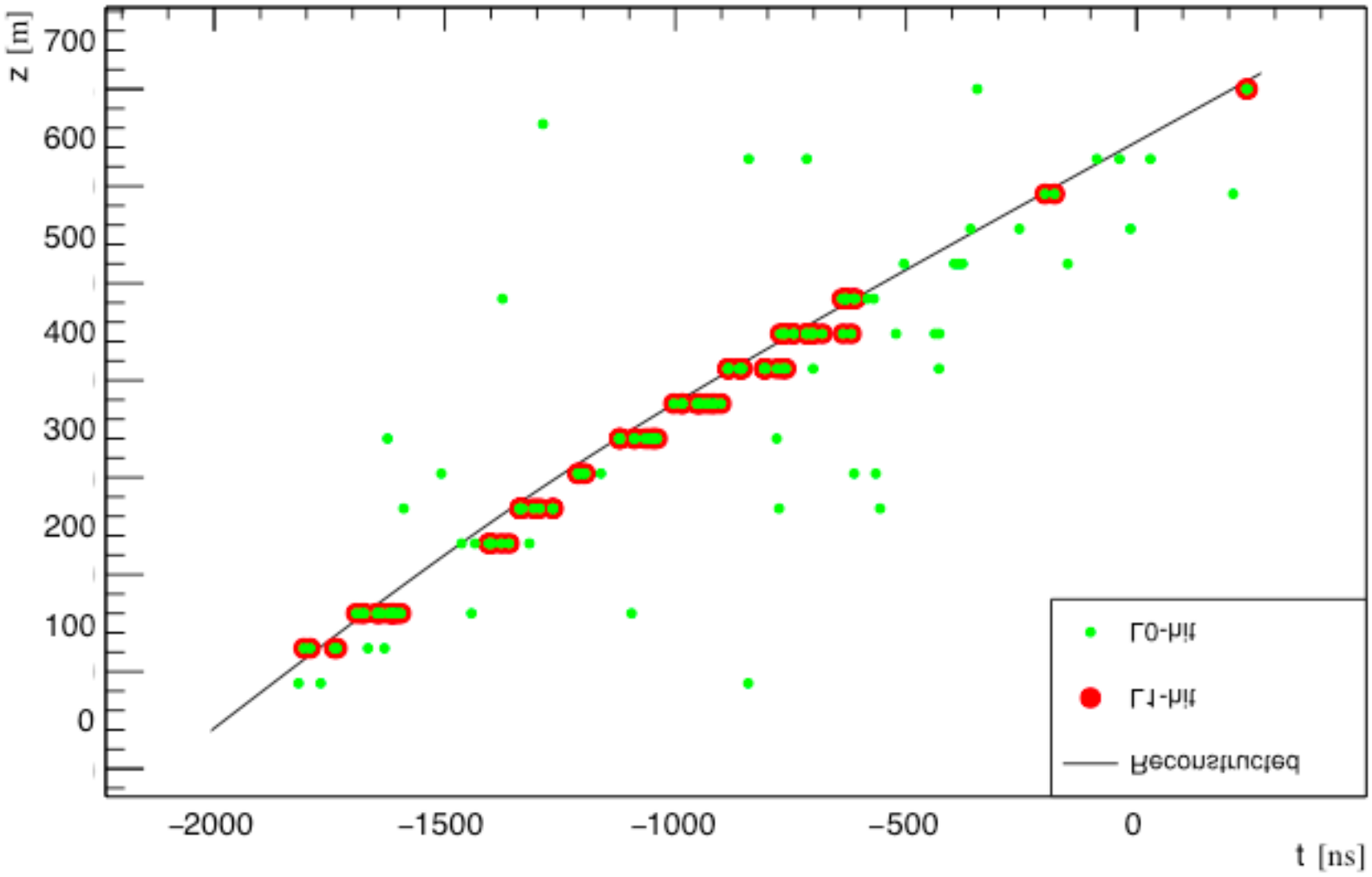


Nearly sub-ns timing calibration

First results: Zenith distribution



Outlook


z [m]
700
600
500
400
300
200
100
0
−2000
−1500
−1000
−500
0
t [ns]
L0-hit
L1-hit
Reconstructed