

ASPERA Technology Forum, photosensors and auxiliary electronics  
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# KM3NeT

## Photomultipliers and Electronics

A large, semi-transparent watermark of the ECAP logo is positioned on the left side of the slide. It features the letters 'ecap' in a bold, lowercase, sans-serif font, with a stylized network of lines above it.

ERLANGEN CENTRE  
FOR ASTROPARTICLE  
PHYSICS

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PHYSICS



# Optical modules

Classical OM with 8 or 10 inch PMT

From 10in to 8in with with high QE photocathode

The same effective area

No magnetic field shielding is needed (hopefully)

Possible use of smaller sphere

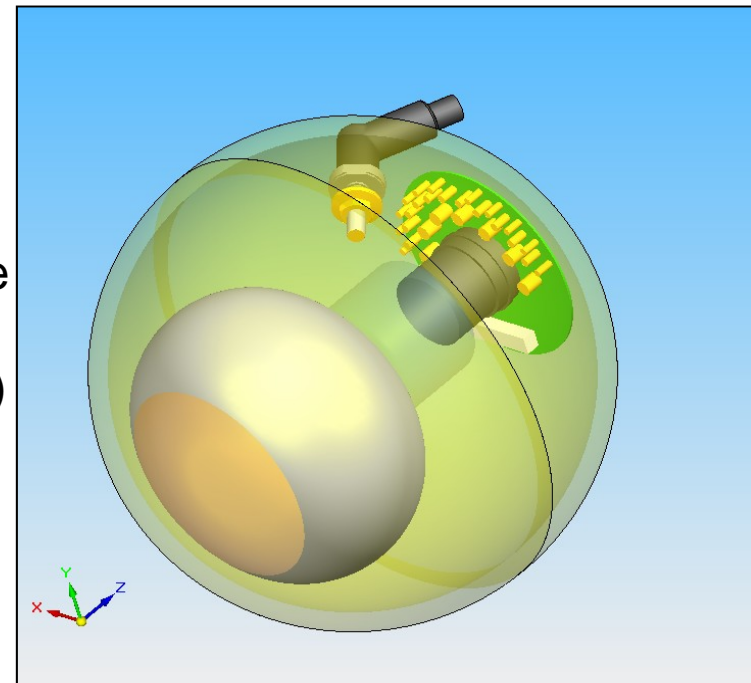
Multi-PMT OM with 31 3-inch PMT

3 x Area of large PMT and directional sensitivity

Reduced number of OMs

Improved single-photon counting

Possible further increase of the photocathode area – 3in+ PMT



# Photomultipliers

10 inch PMT

R7081 – Hamamatsu

8 inch PMTs

ET9354 – ET Enterprises

R5912 – Hamamatsu



3 inch PMTs

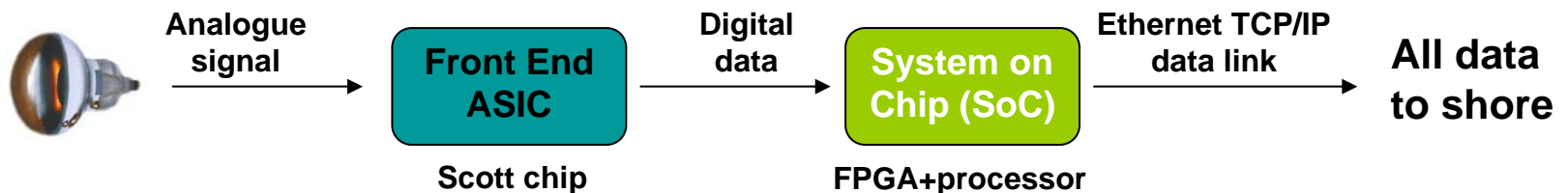
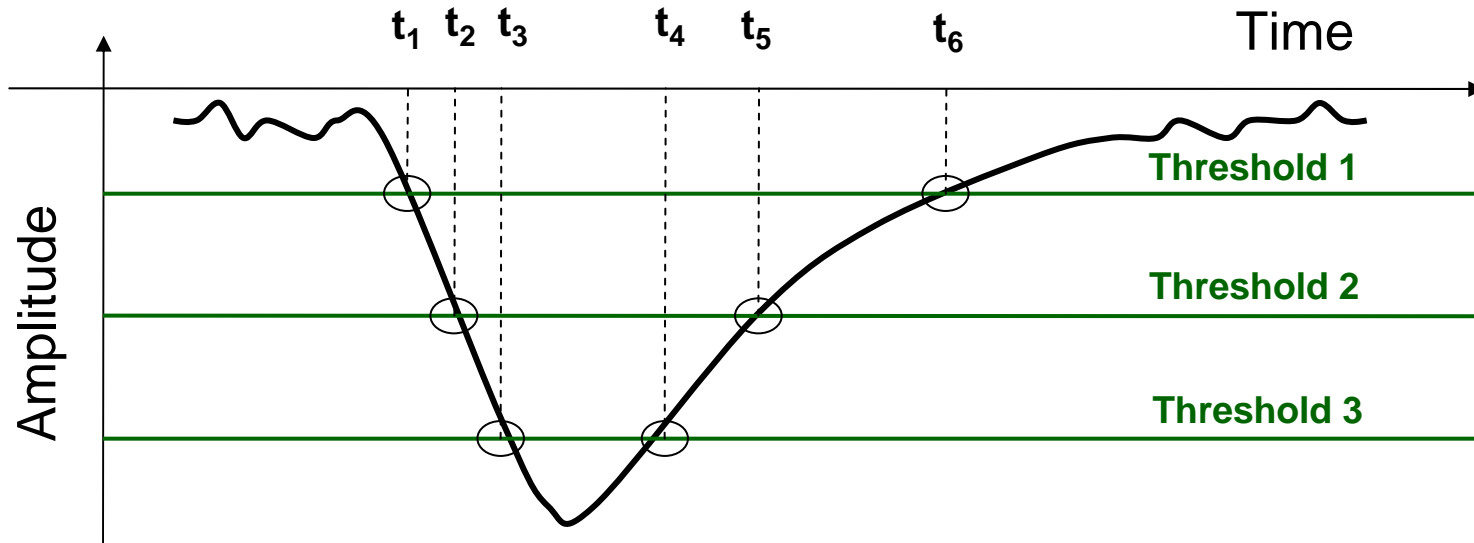
Existing PMTs do not quite match KM3NeT specifications.

New developments ongoing.



# Front-End Electronics: Time-over-Threshold

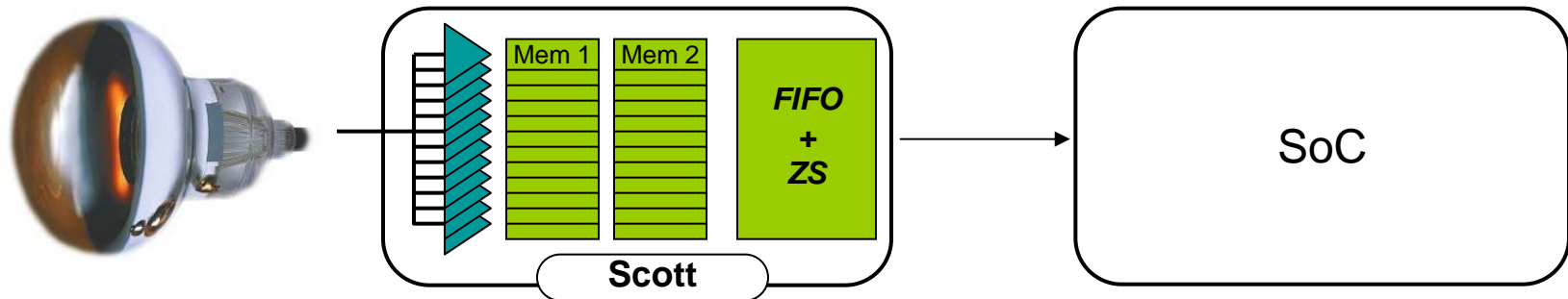
From the analogue signal to time stamped digital data:



SCOTT – Sampler of Comparators Outputs with Time Tagging  
ASIC – Application Specific Integrated Circuit

# Unified Readout for Single- and Multi-PMT OMs

N thresholds for 1 PMT



N/k thresholds for k PMTs

