# SiPM and Quartz tests at UVA

➢ Work by Vahe Mamyan and Oscar Rondon

➢ Goals:

- test response of Silicon-Photo Multipliers

(SiPM) to LED light and quartz light

- setup a data acquisition system using SiPM

and Channel Photo Multiplier (CPM)

➢ Purpose: Contribute to design of SANE front

quartz hodoscope to be built at JLab.

Pulse output of 1mm SiPM to LED light

Output of blue LED light
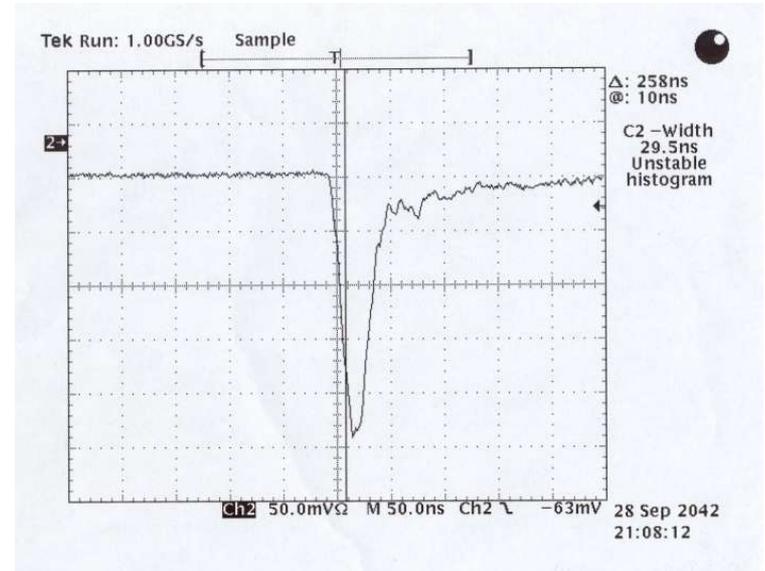
Output of green LED light
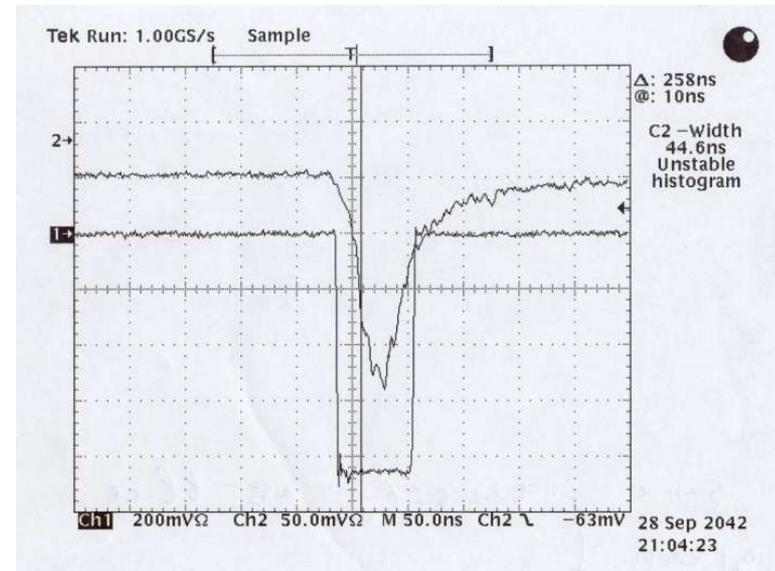
Output of red LED light

Coincidence Setup

Pulse Generator

Photo Diode

SiPM

Quartz

CPM
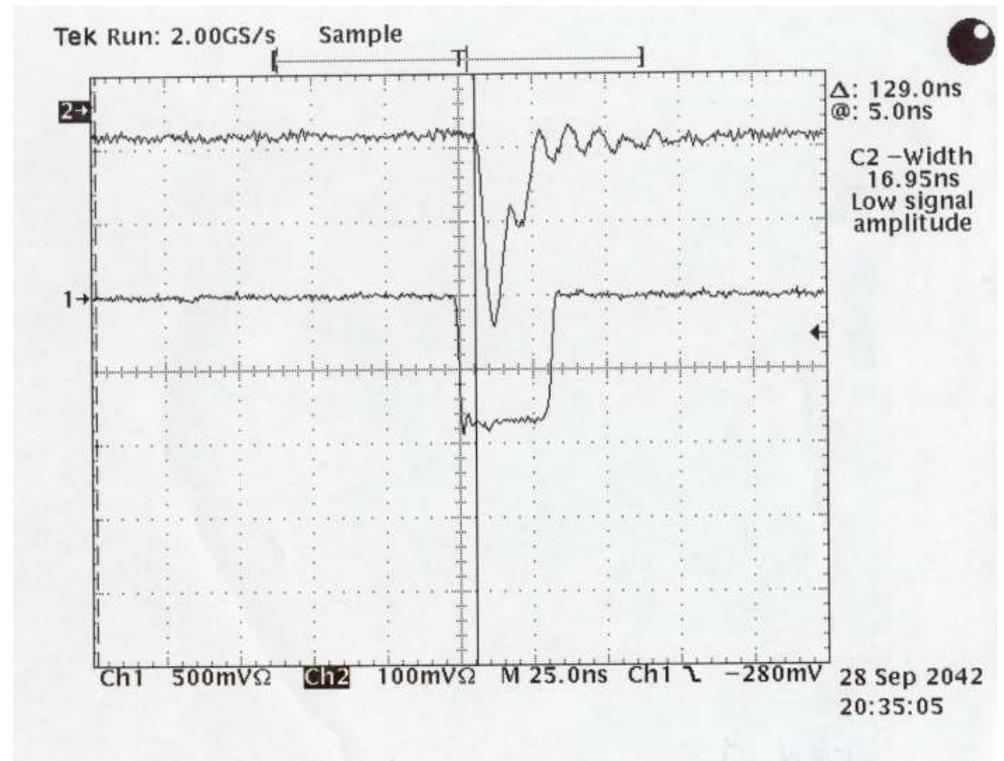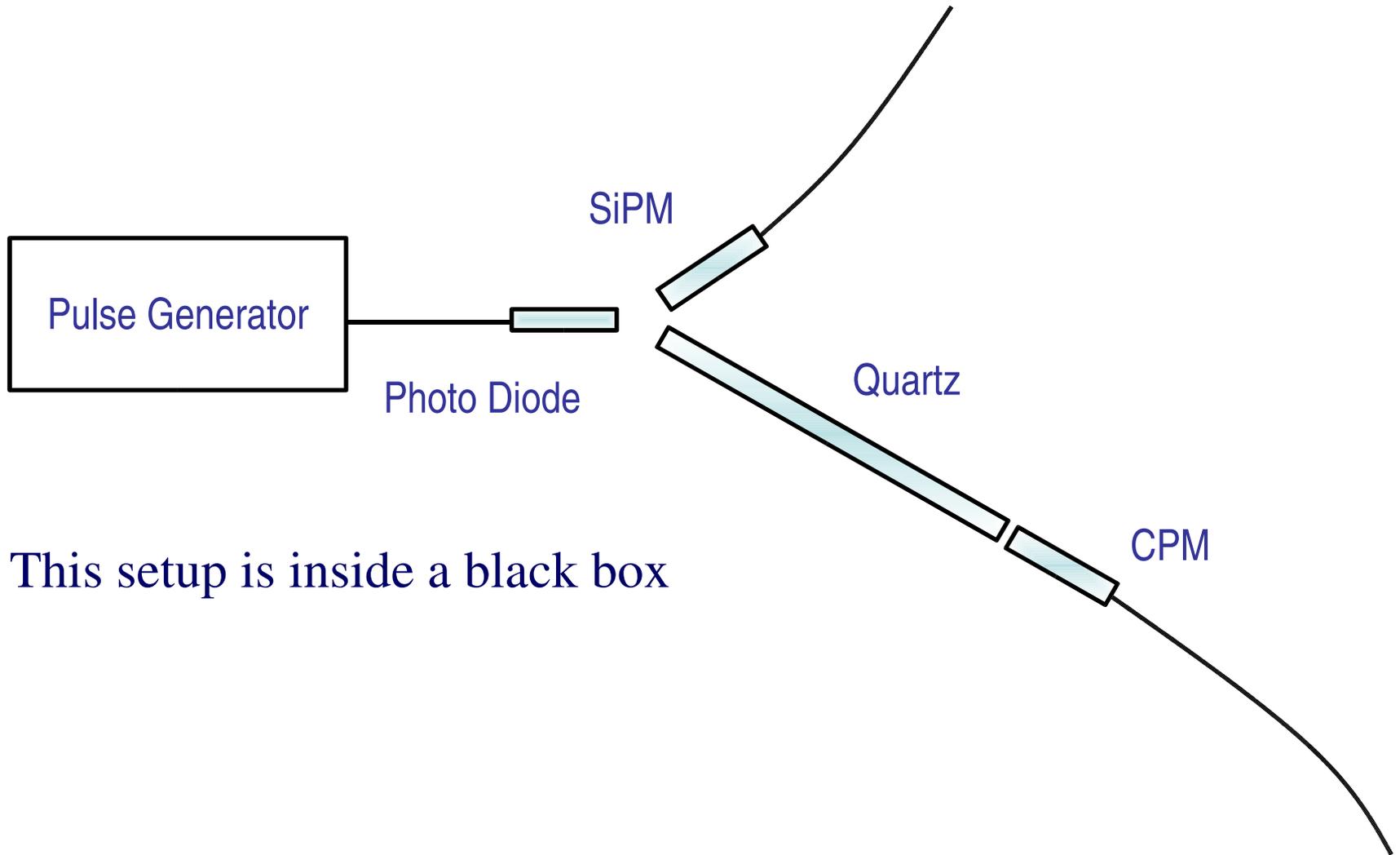
This setup is inside a black box

Trigger Scheme
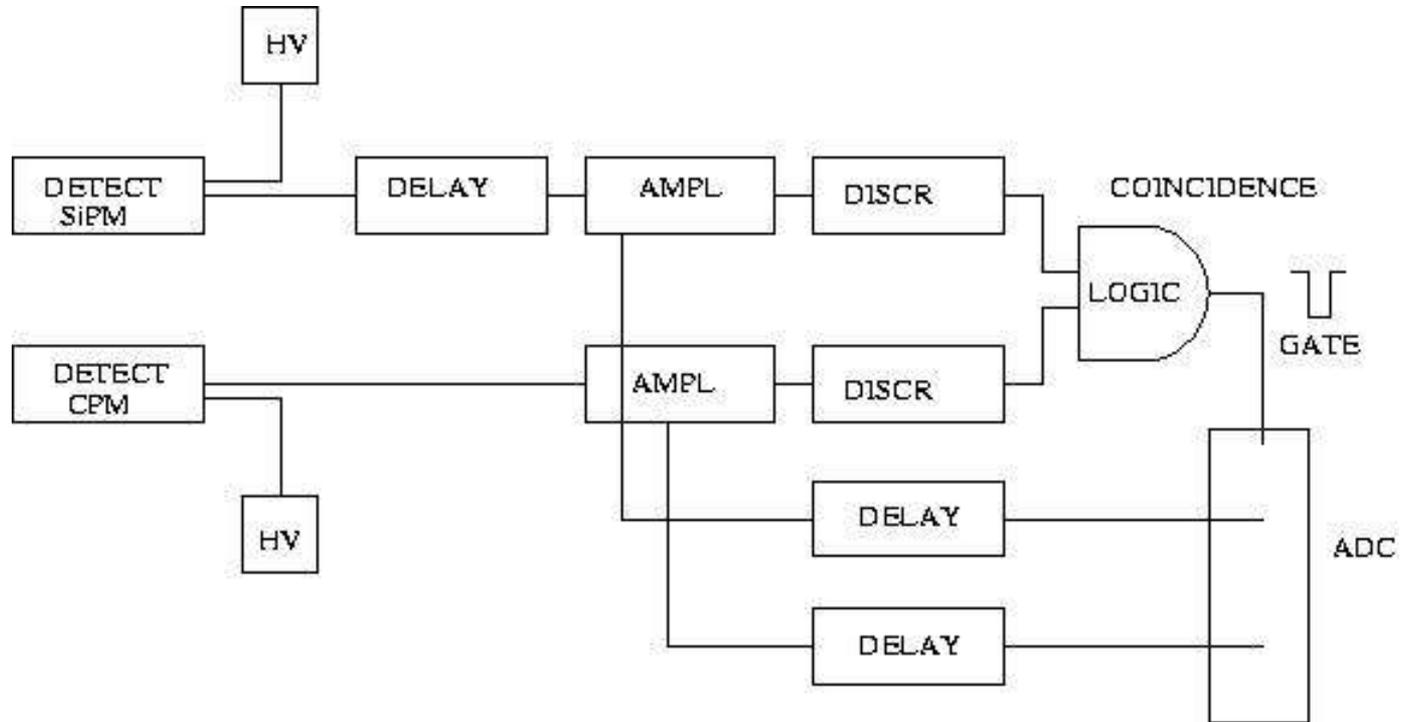
Trigger and ADC signals

➢ Channel1 (Ch1) – coincidence signal

➢ Channel2 (Ch2) – SiPM signal

➢ Channel3 (Ch3) – Channel Photo Multiplier
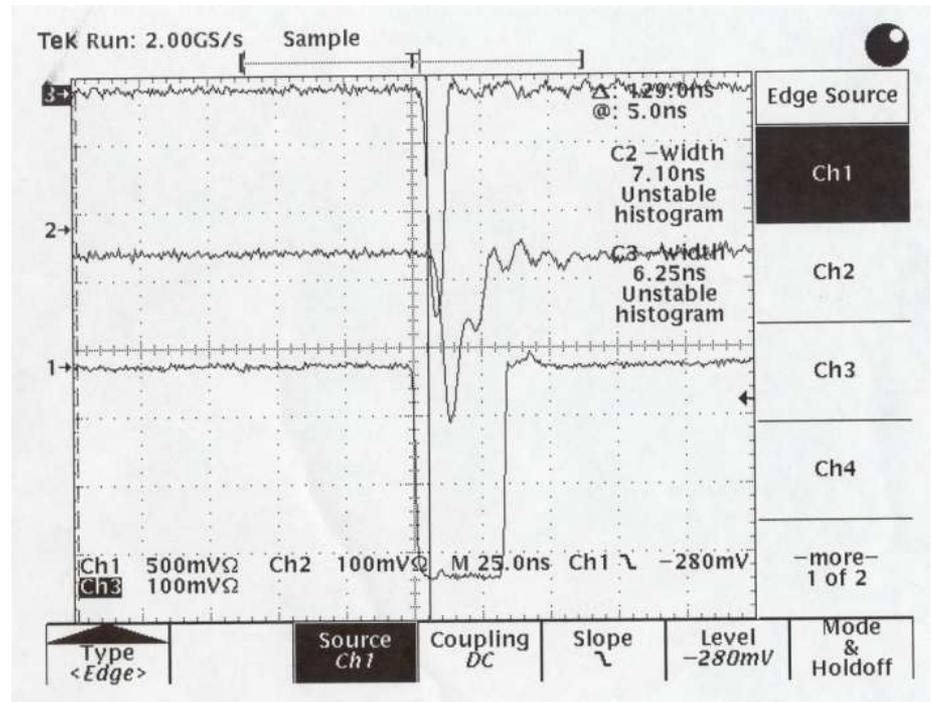
Data Acquisition using Kmax 8.0
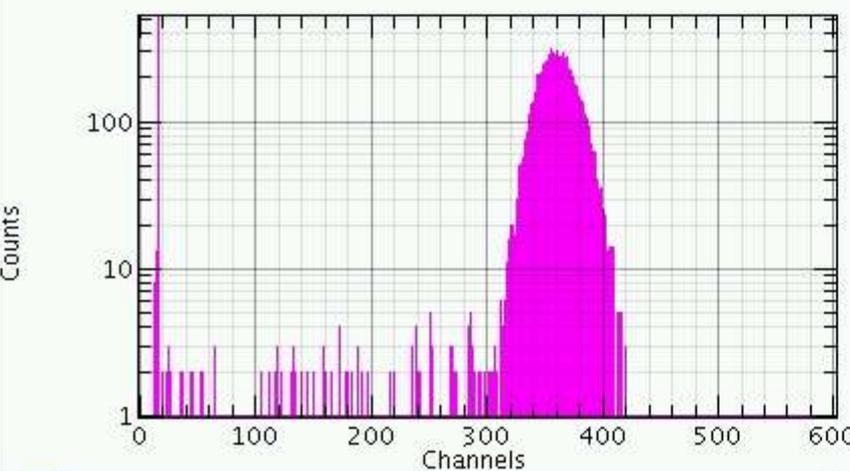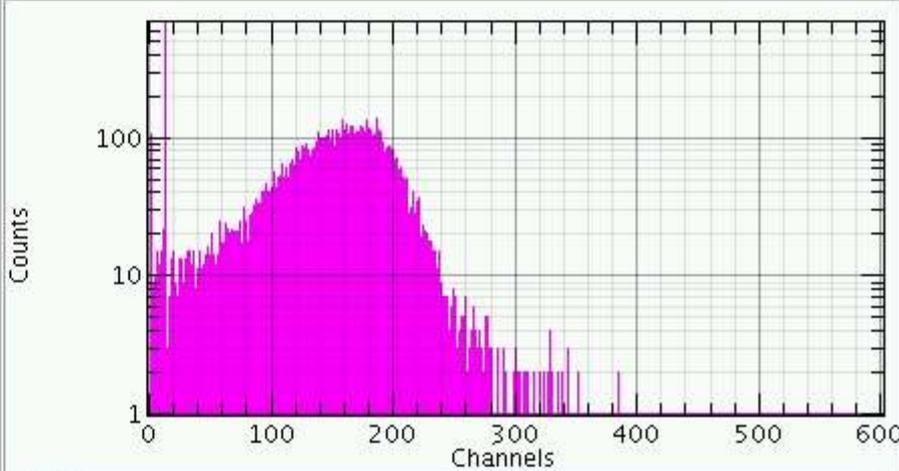
Tests using Sr-90 radioactive source

Wavelength shifter (green)

Channel Photo Multiplier (CPM)

Sr-90
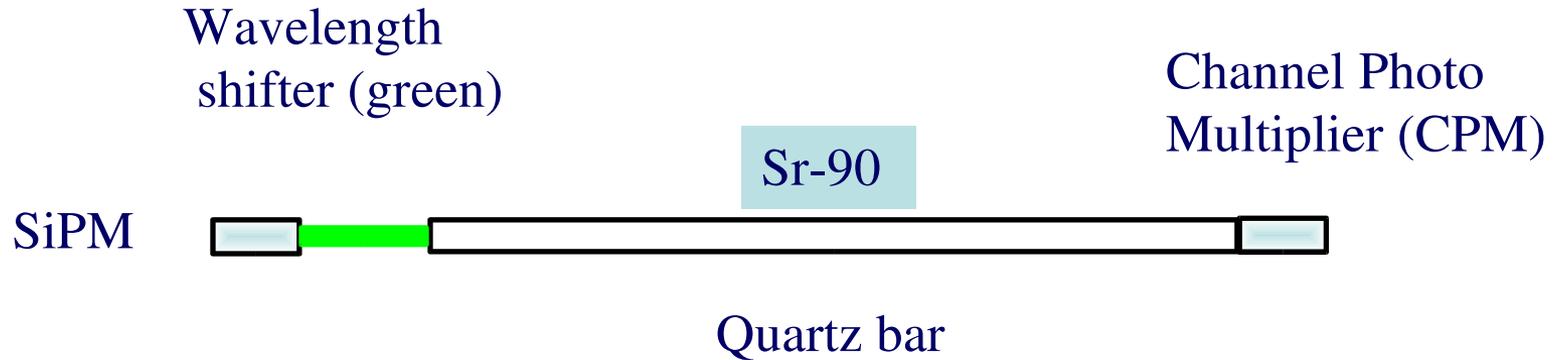
SiPM

Quartz bar

➢ Sr-90 - few hundred counts/second

➢ Good signal from CPM

➢ No signal from 1mm SiPM

ADC signal of CPM

➢ CPM ADC signal with Sr-90 source on quartz bar.
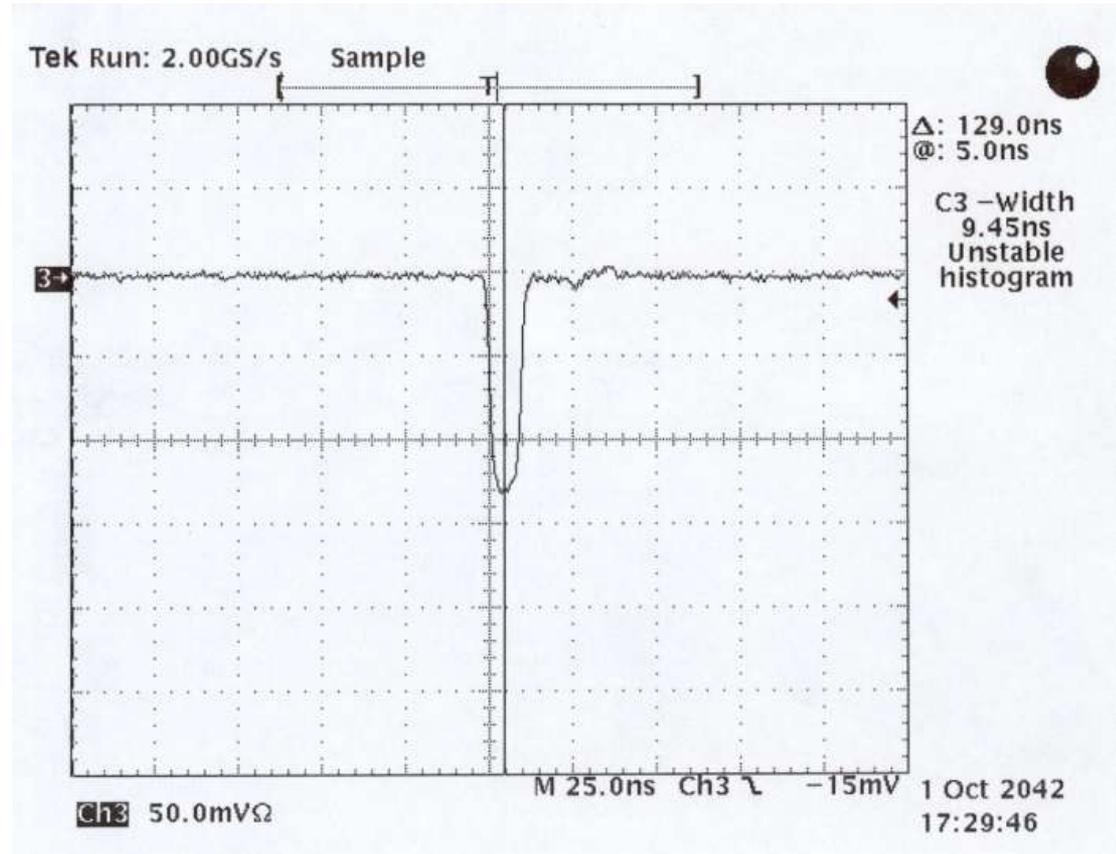
Conclusion

➢ Using SiPM we can detect light from LED indicating that SiPM is in working condition

➢ Light, produced by electrons from Sr-90, passing through quartz glass is not enough to be detected by SIPM, while it can be detected with CPM

➢ Using green wavelength shifter did not work either