

First shashlyk module test result

(updated in 8/20/2016)

Ye Tian

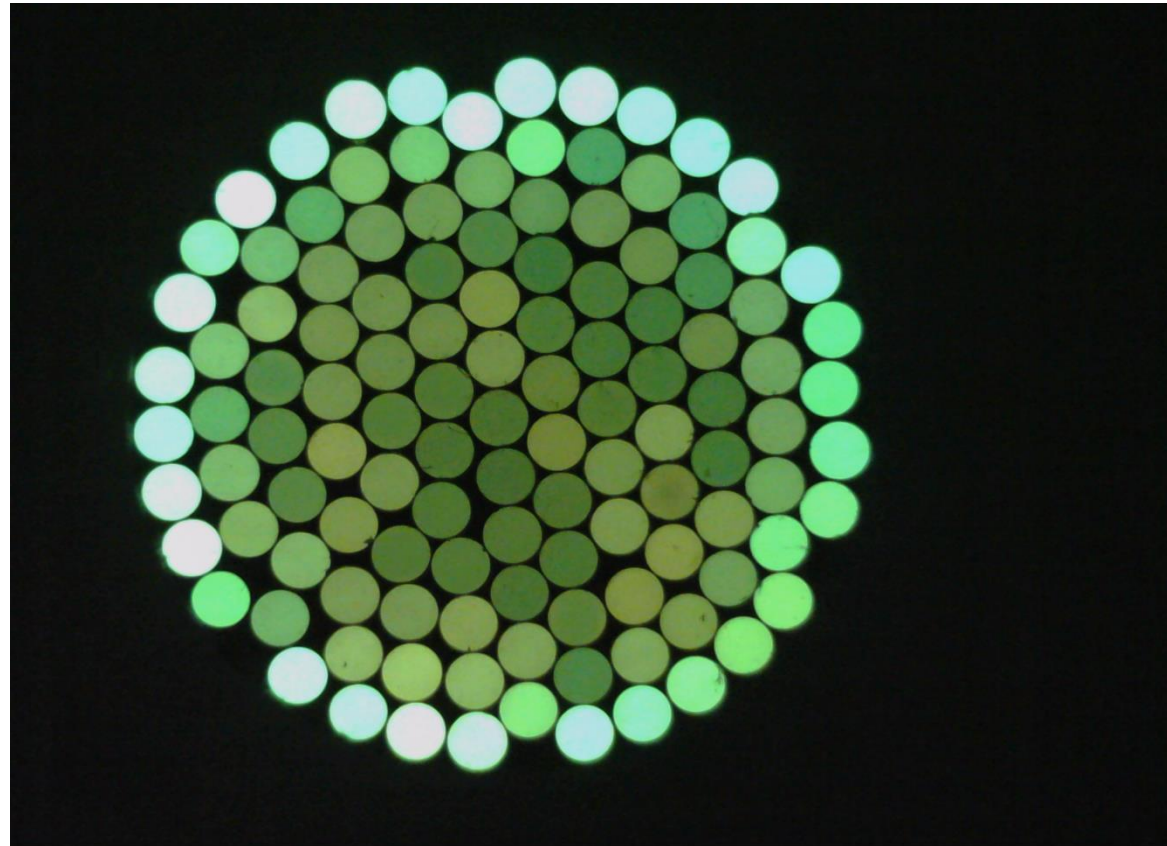
Cunfeng Feng

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Polish fibers in bundle by milling machine

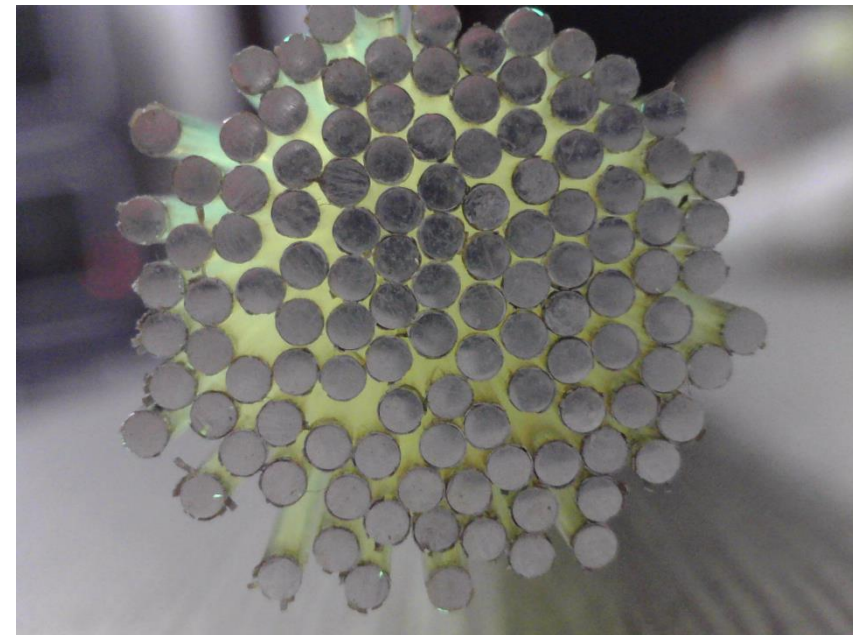
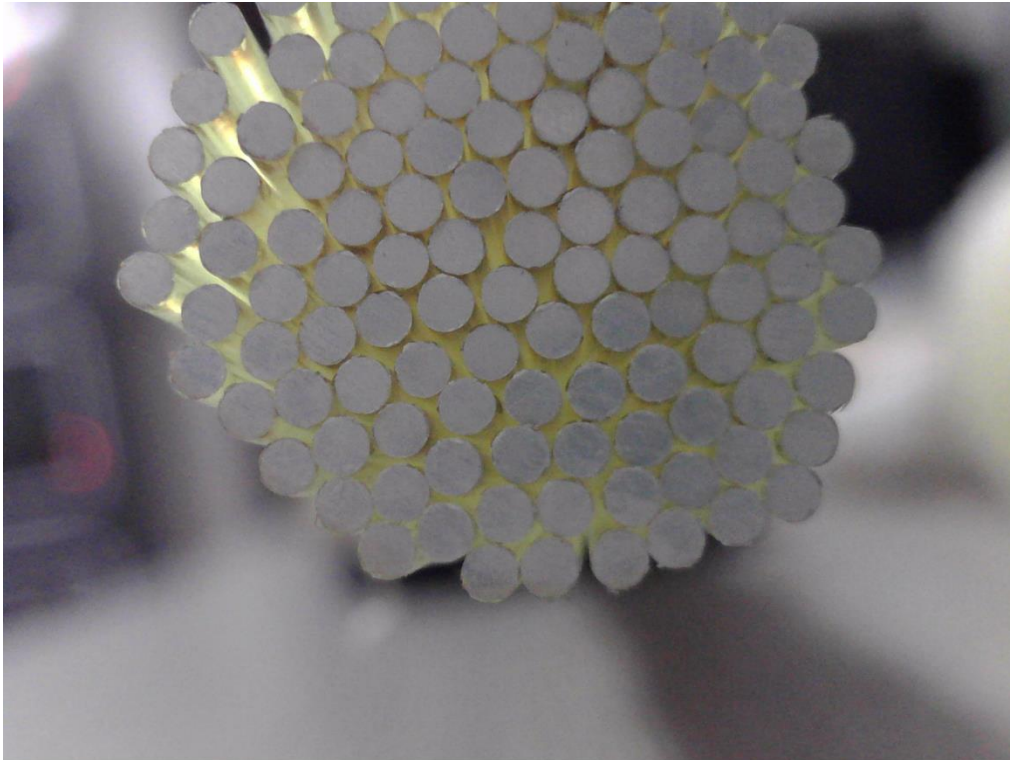
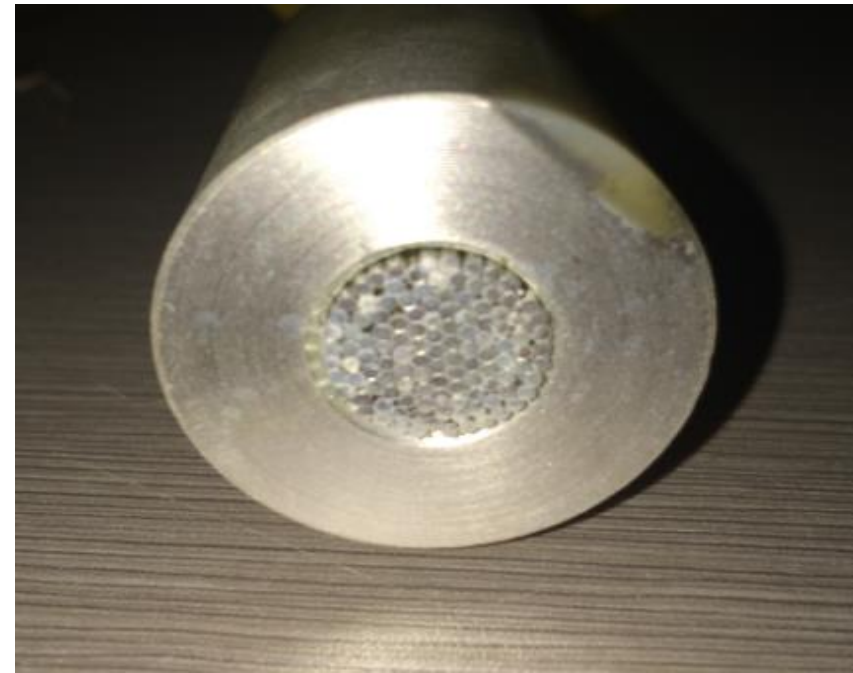
Use a new milling cutter with 1cm diameter.



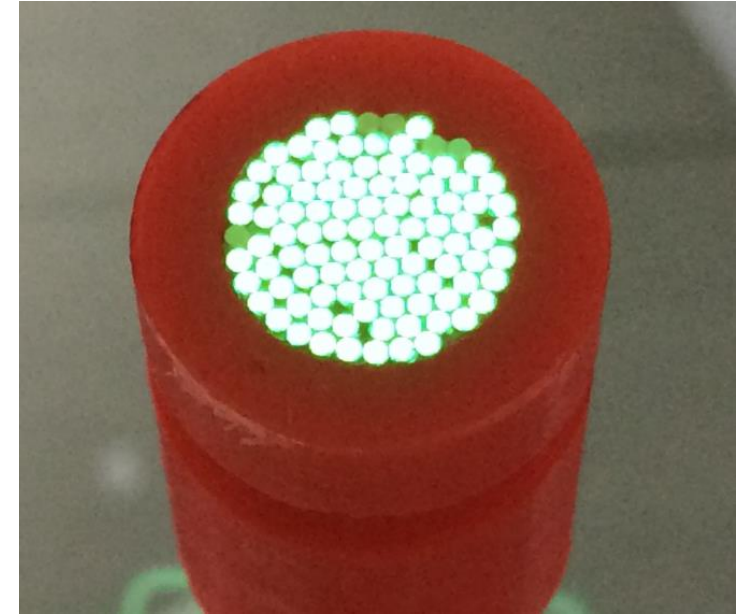
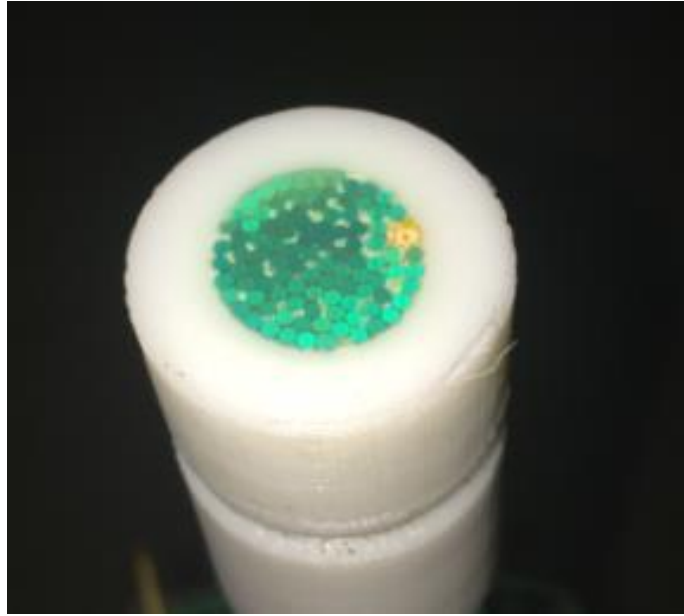
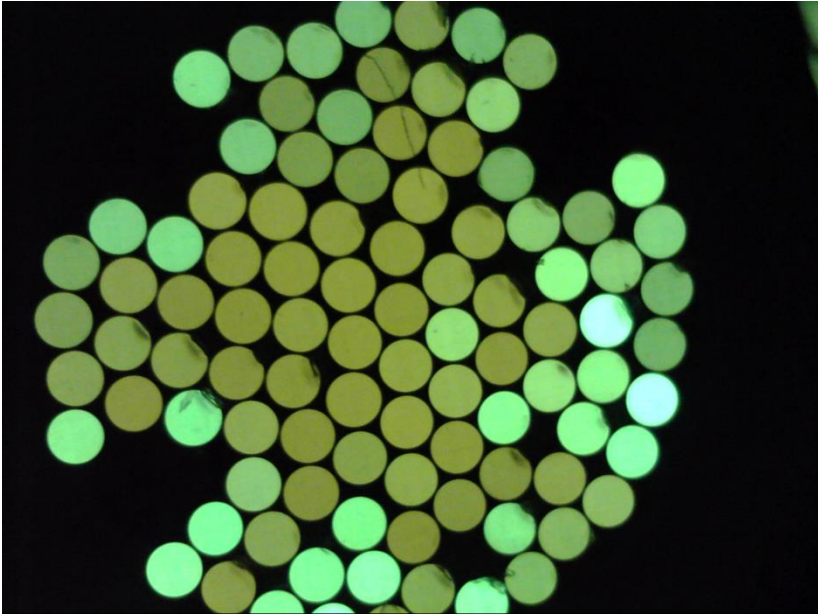
Better than previous result, need to clean.

Sputtering plating

We got three bundles with plating, only one bundle could in use now.
Problem: The edge of mirror is easy to shed when insert to module



Polish result for glued end



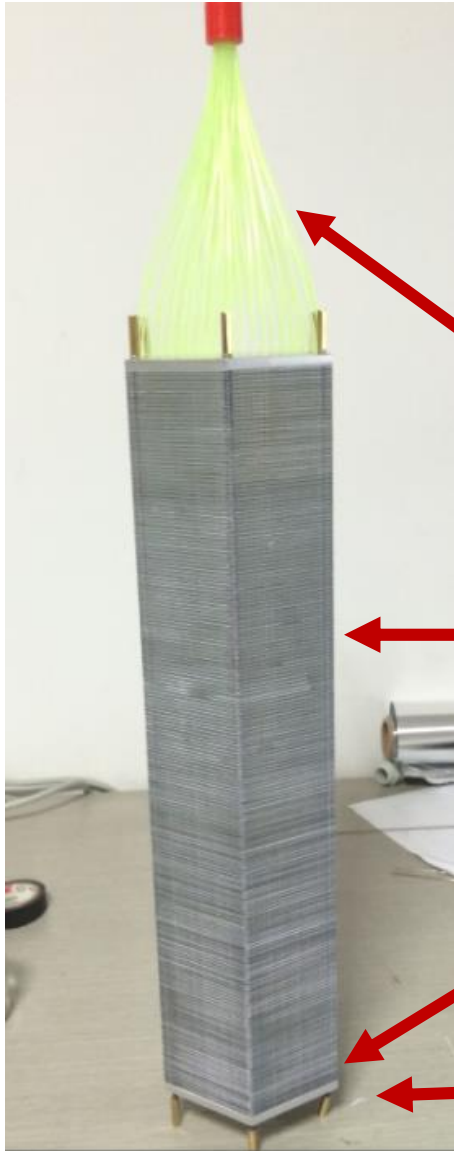
Not good, should improve the usage of glue.

Two modules in SDU

We have two modules in SDU now, the new one which is numbered as #2 use upgraded scintillator and lead, and also use fiber with silver mirror.

Module No.	WLS fiber	Scintillator	Lead layer	Fiber end	Reflective layer	Front plate
SDU #1	BCF91	Kedi(original)	From US	No mirror	Print paper	
SDU #2	BCF91	Kedi(new)	From China	Silver mirror	Print paper	No holes

SDU #2 Shashlyk module description



PMT: R11102 (Set the Gain equal to $5 \cdot 10^6$)

Fiber bundle coupled to PMT without optical grease

18cm fiber outside the module which a little longer

New batch scintillator from Kedi company;
Lead get from USA company;
Print paper from SDU.

Fiber end plated with silver mirror

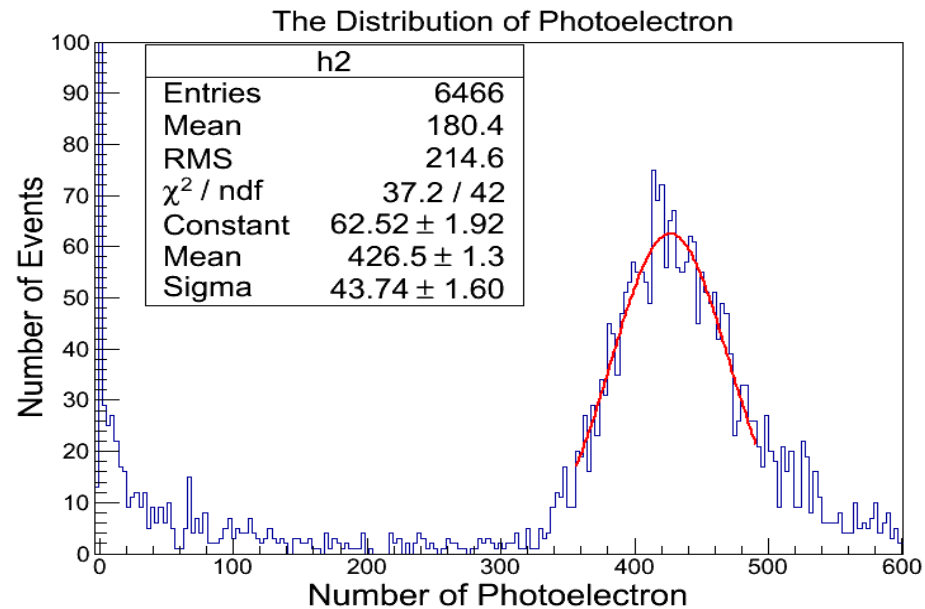
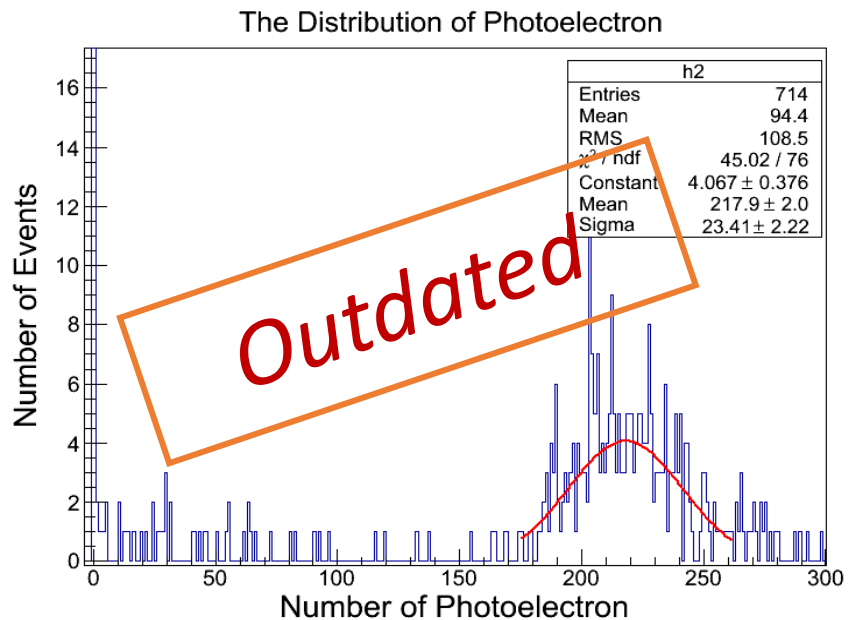
Coved by two layers Tyvek paper for test

Front plate without holes



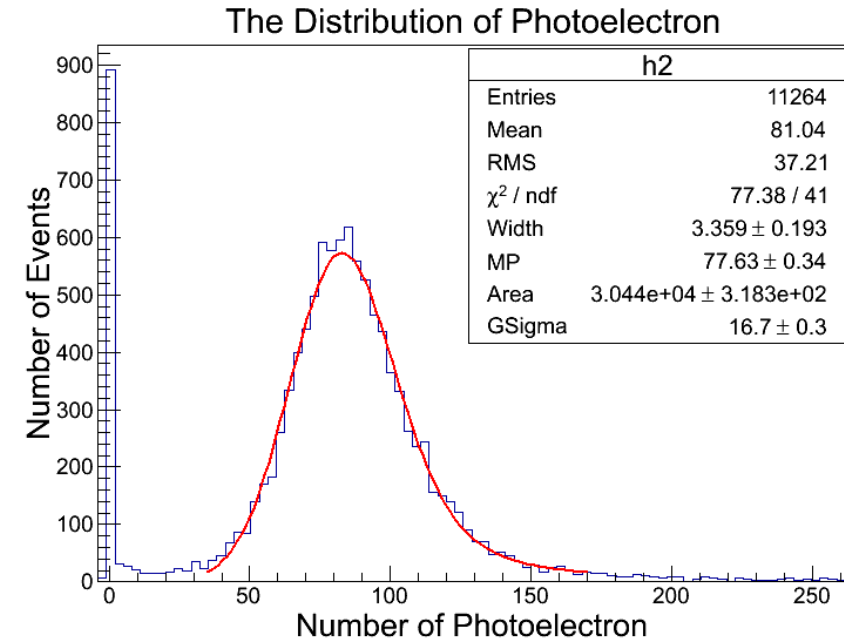
Vertical test result

- Triggered by two hexagon preshower scintillator, total height 85cm



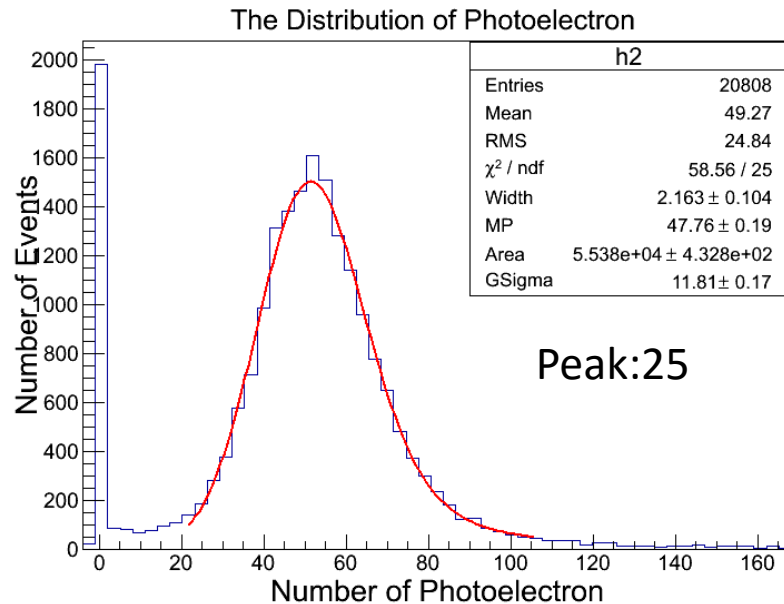
Horizontal result

- using two hexagon scintillators as trigger in the middle of shashlyk. It's fitted by convolution of landau and gauss. MP is the gauss peak. Real peak is about 83 .

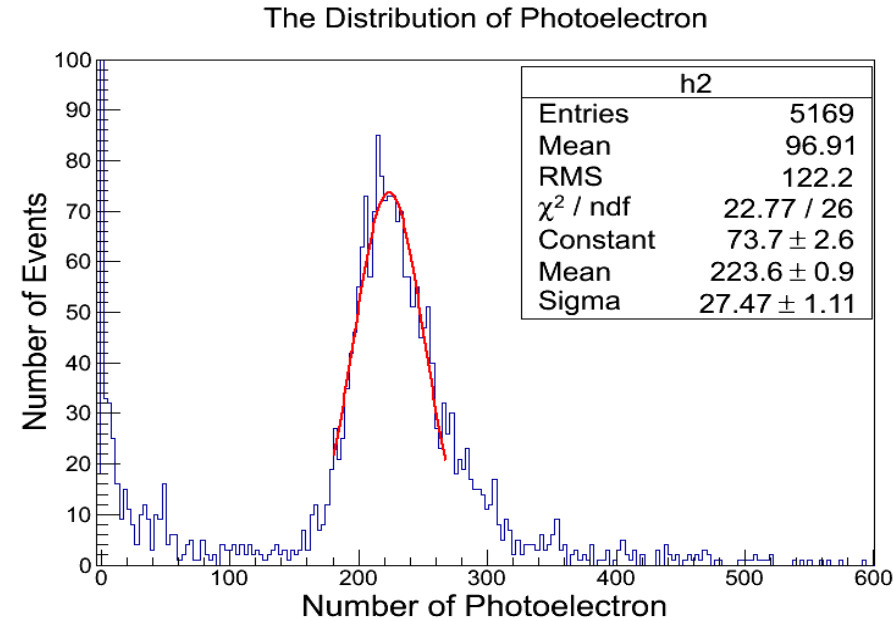


SDU #1 module

- We also use a previous module for some other test, and the module has no mirror on fiber and use low light yield scintillator comparing with new module.



horizontal



vertical



Result

module	Vertical (resolution)	Horizontal	Horizontal(without Tyvek)
SDU #1	426.5(10.25%)	83	
SDU #2	223.6(12.28%)	50	38.6
RATE	1.907	1.66	

For previous result, if the new scintillator could improve light yield 40%, and plated mirror end could improve 60%, that should be 224% better, which don't match.

Other explanation: for my previous 5 layers scintillator test, I didn't use optical grease, but for Li Ang's result, 3 layer with optical grease could get the same result.