First shashlyk module test result

Ye Tian

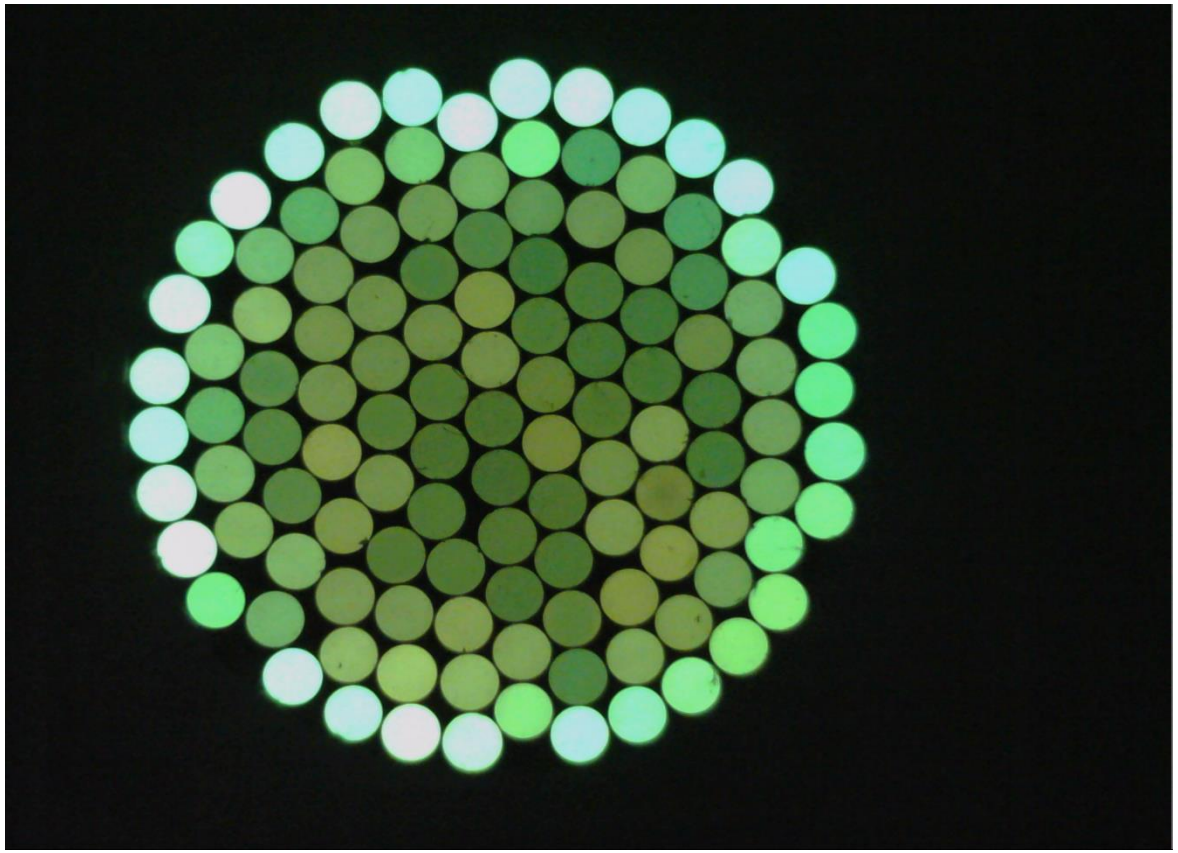
Cunfeng Feng

Jianbin Jiao

Shandong University

Polish fibers in bundle by milling machine

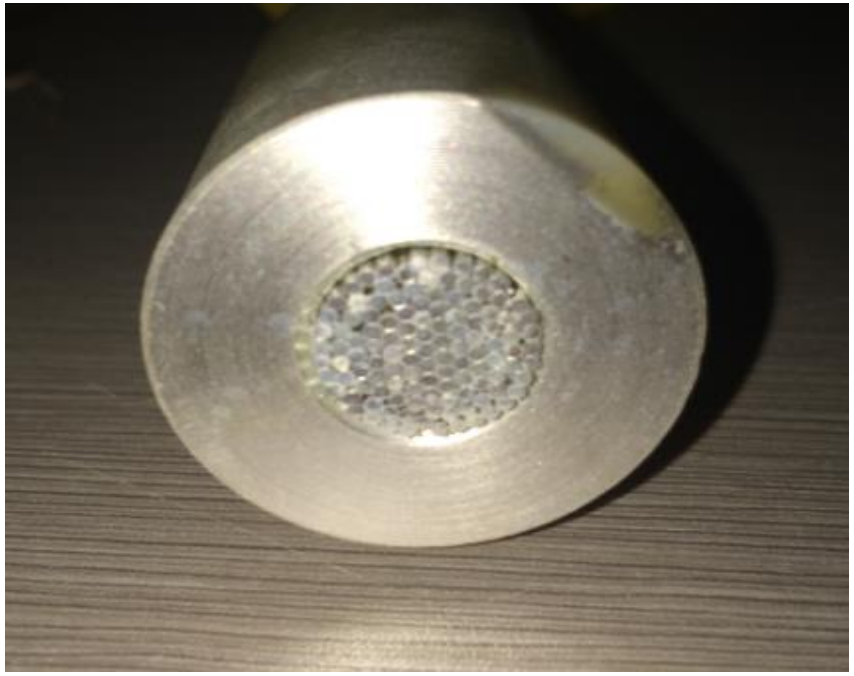
Use a new milling cutter with 1cm diameter.

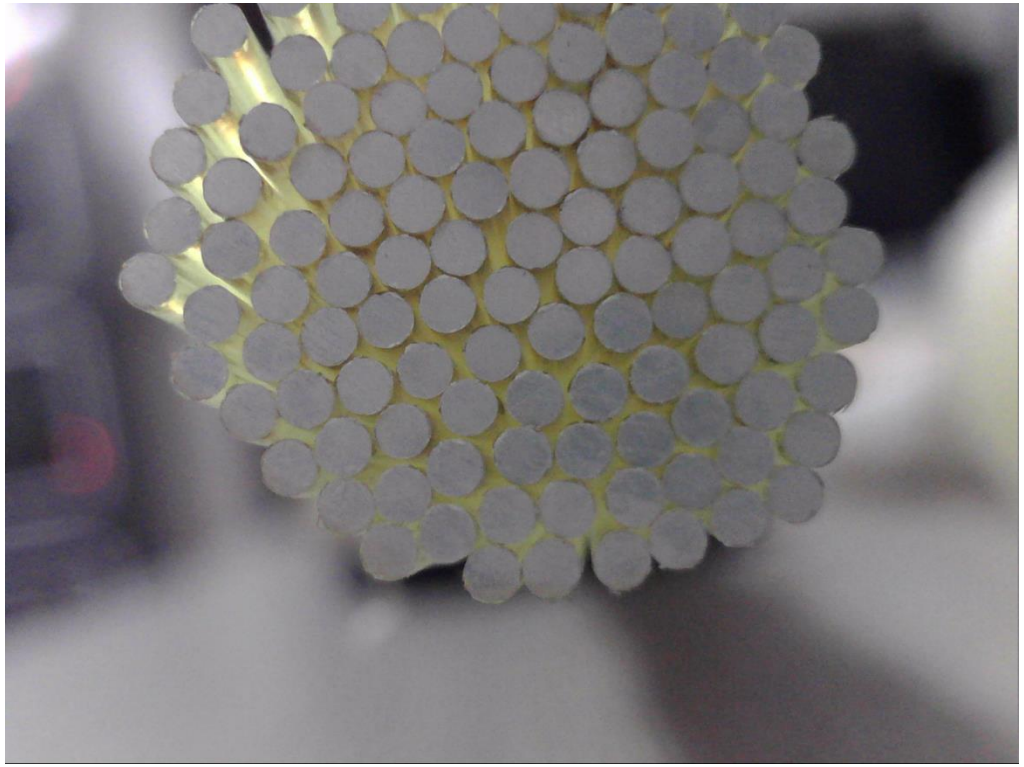


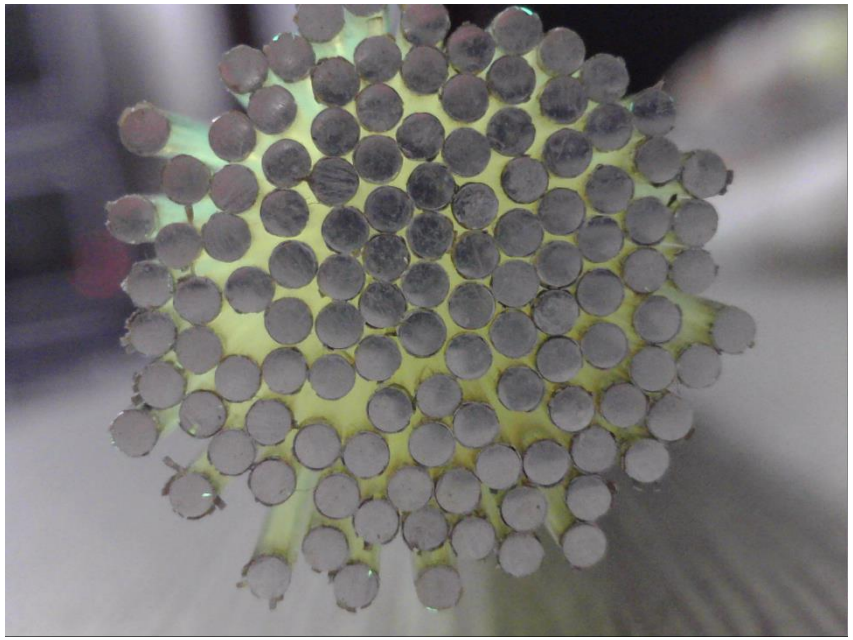
Better than previous result, need to clean.

Sputtering plating

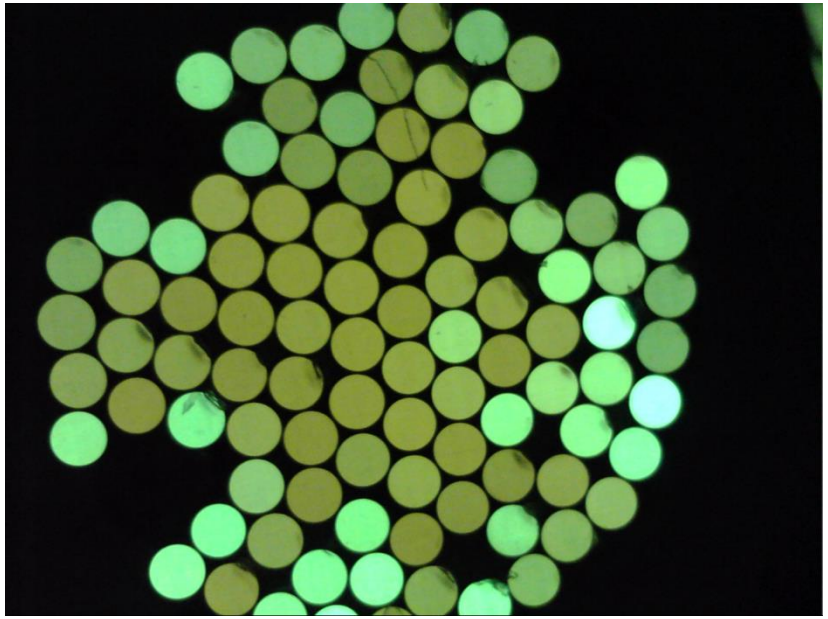
We got three bundles with plating, only one bundle could in use now.
Problem: The edge of mirror is easy to shed when insert to module

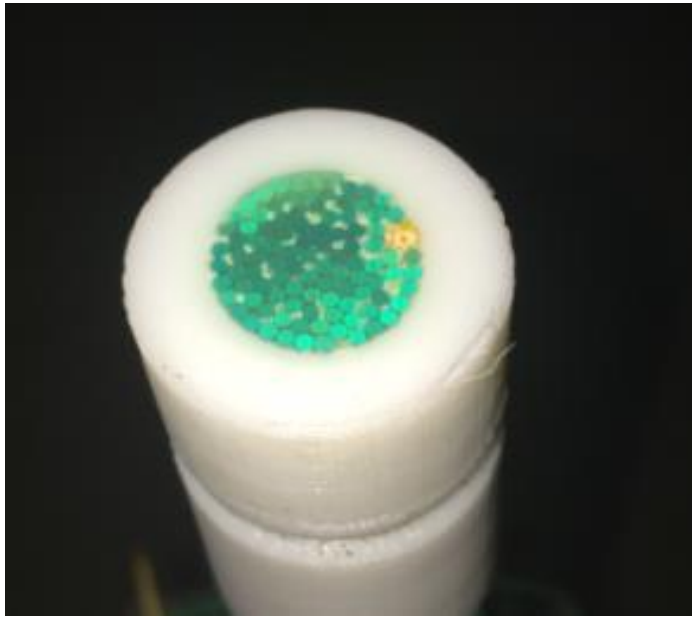


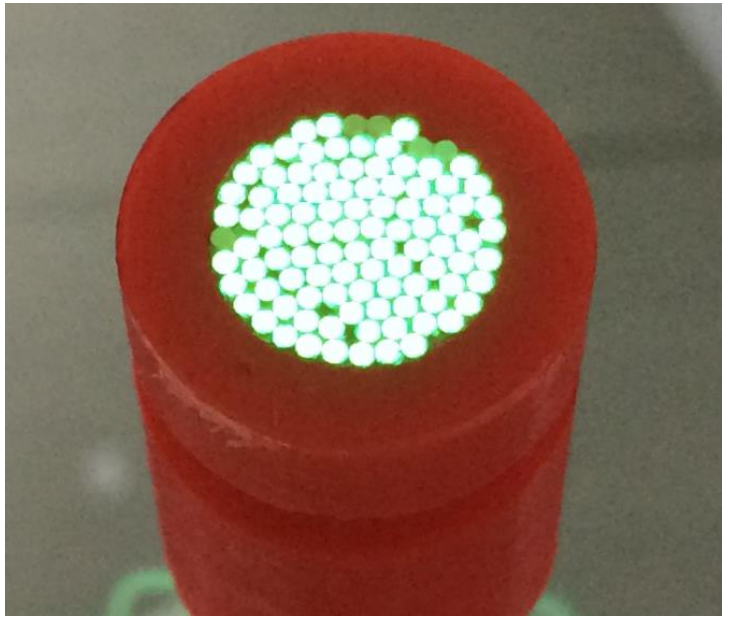




Polish result for glued end

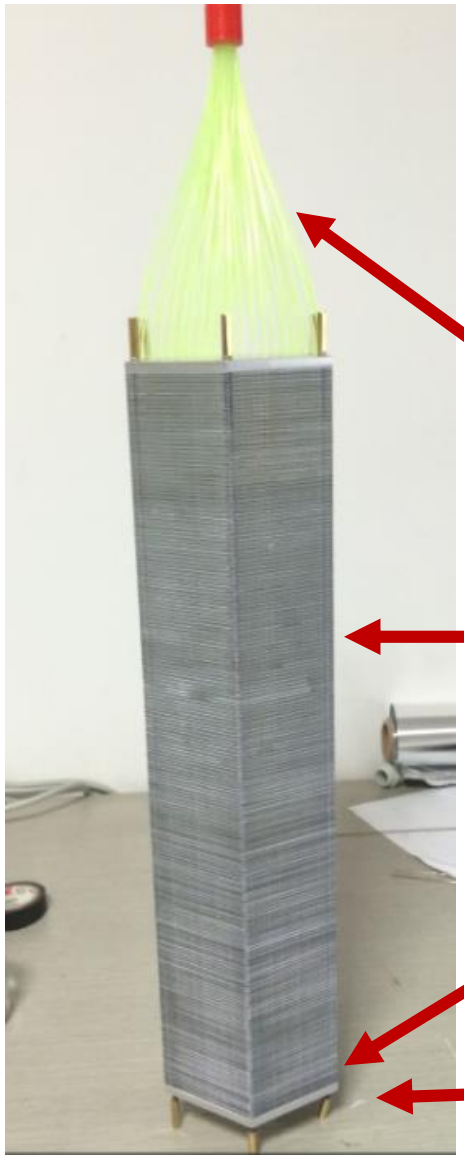






Not good, should improve the usage of glue.

Shashlyk module description



PMT: R11102 (Set the Gain equal to 5*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.

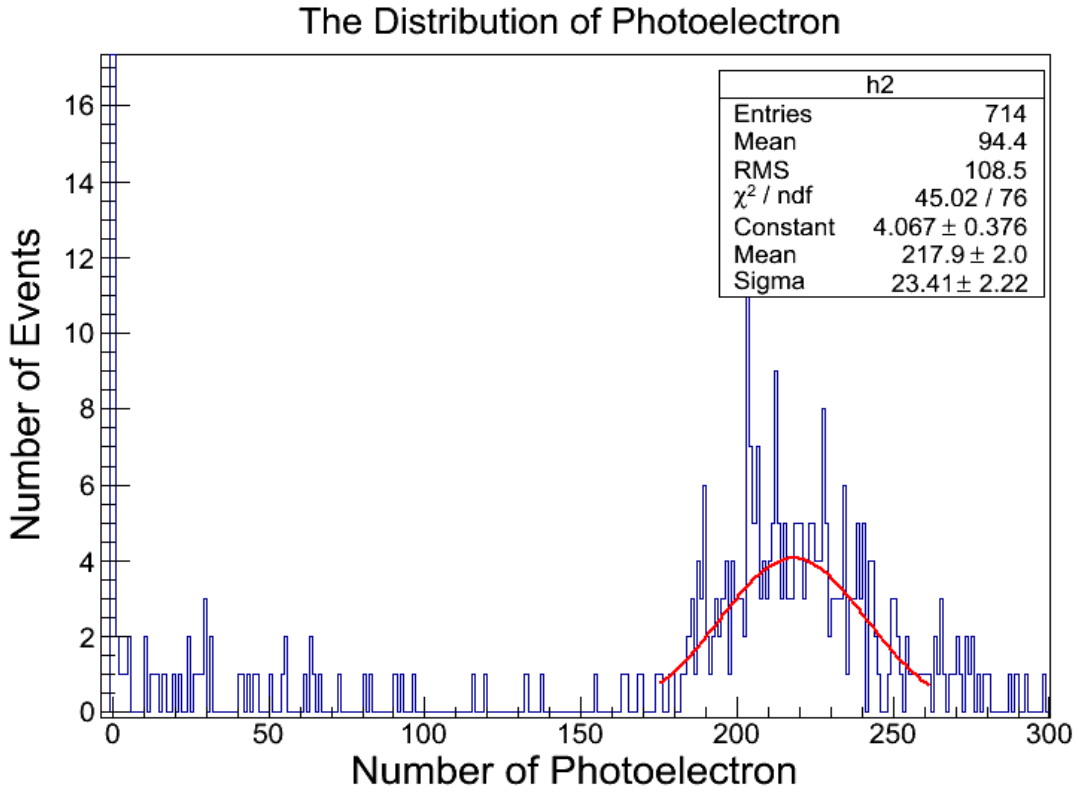
Fiber end plated with silver mirror

Coved by two layers Tyvek paper for test

Front plate without holes

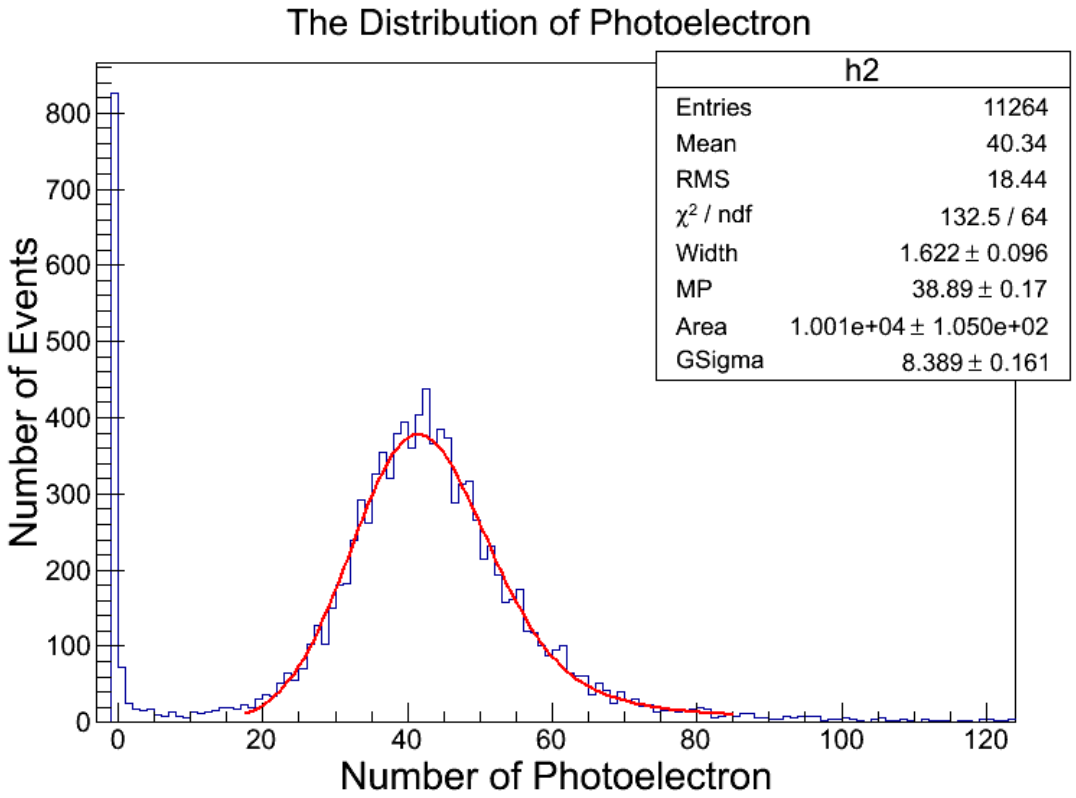
Vertical test result

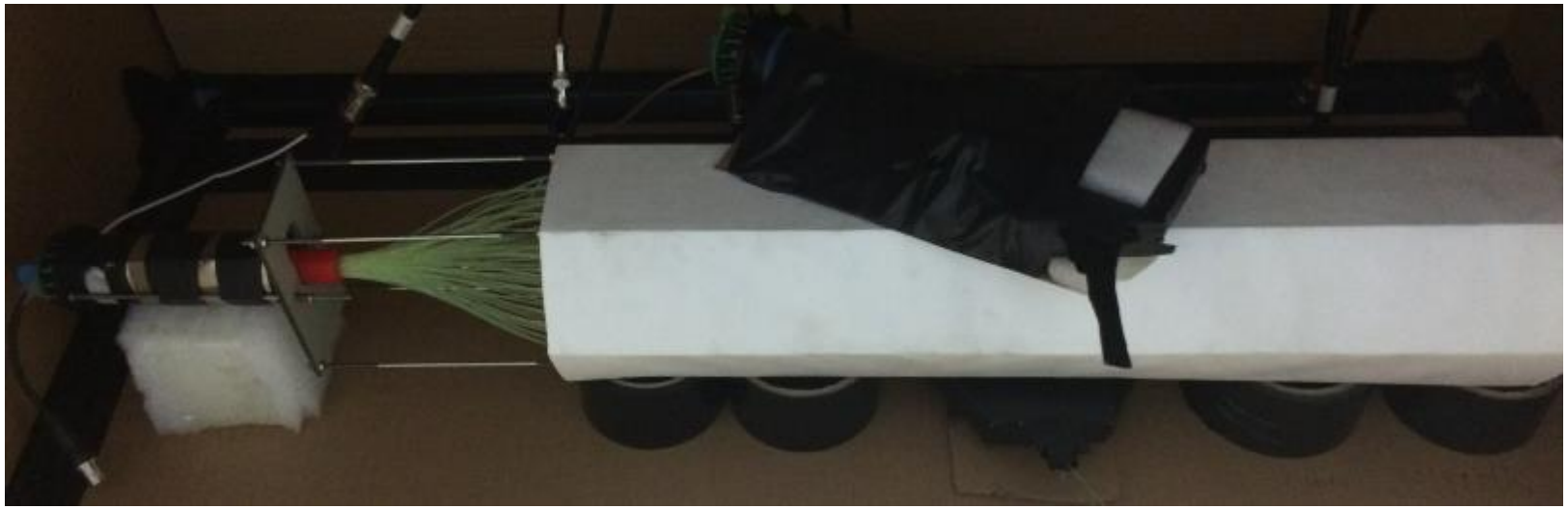
- Triggered by two hexagon preshower scintillator, total height 85cm
- Data taken less than 12 hours, too few events.



Horizontal result

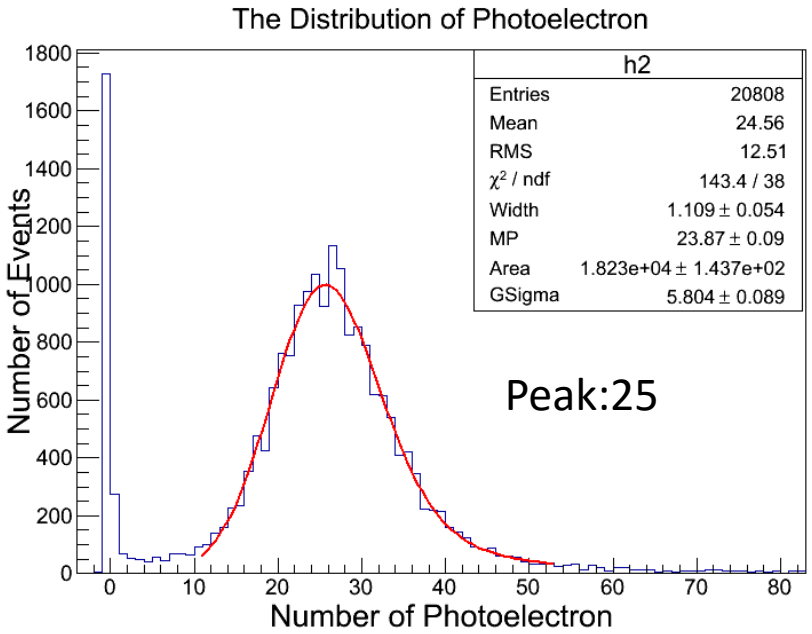
- using two hexagon scintillators as trigger in the middle of shashlyk. It's fitted by convolution of landau and gauss. MP is the gauss peak. Real peak is about 41.5 .



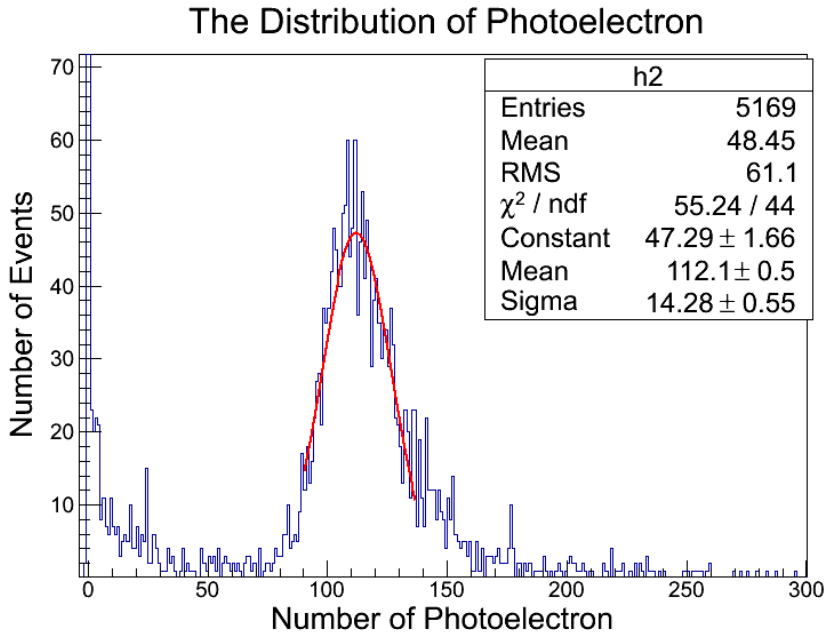


Other module

- 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	Horizontal	Horizontal(without Tyvek)
New	217.9	41.5	
Previous	112.1	25	19.3
	1.94	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.