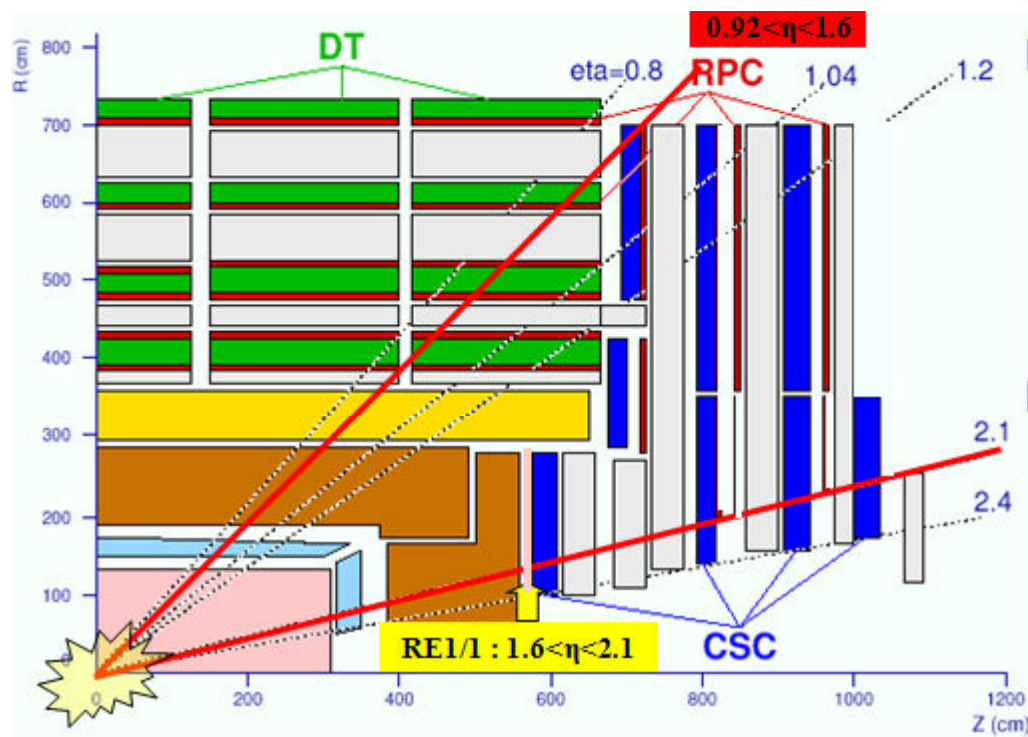


Construction of 6-gap HPL RPCs and The Test Plan

1. Motivation
2. Construction of 6-gap RPC
3. Future test plans

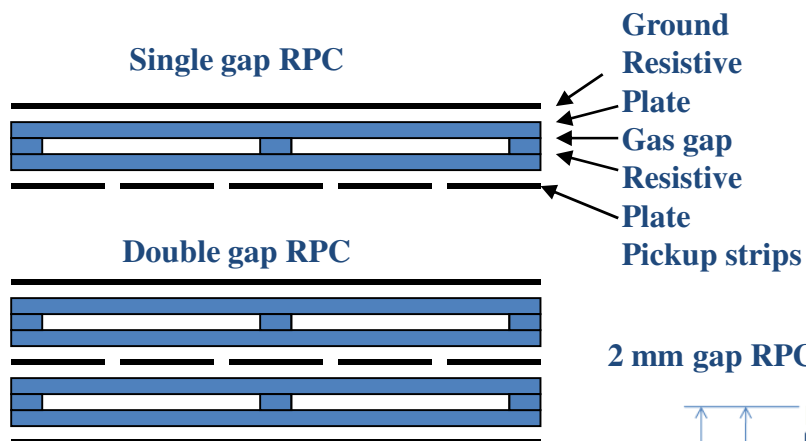
Moon Bongsun – Korea Univ.

Motivation

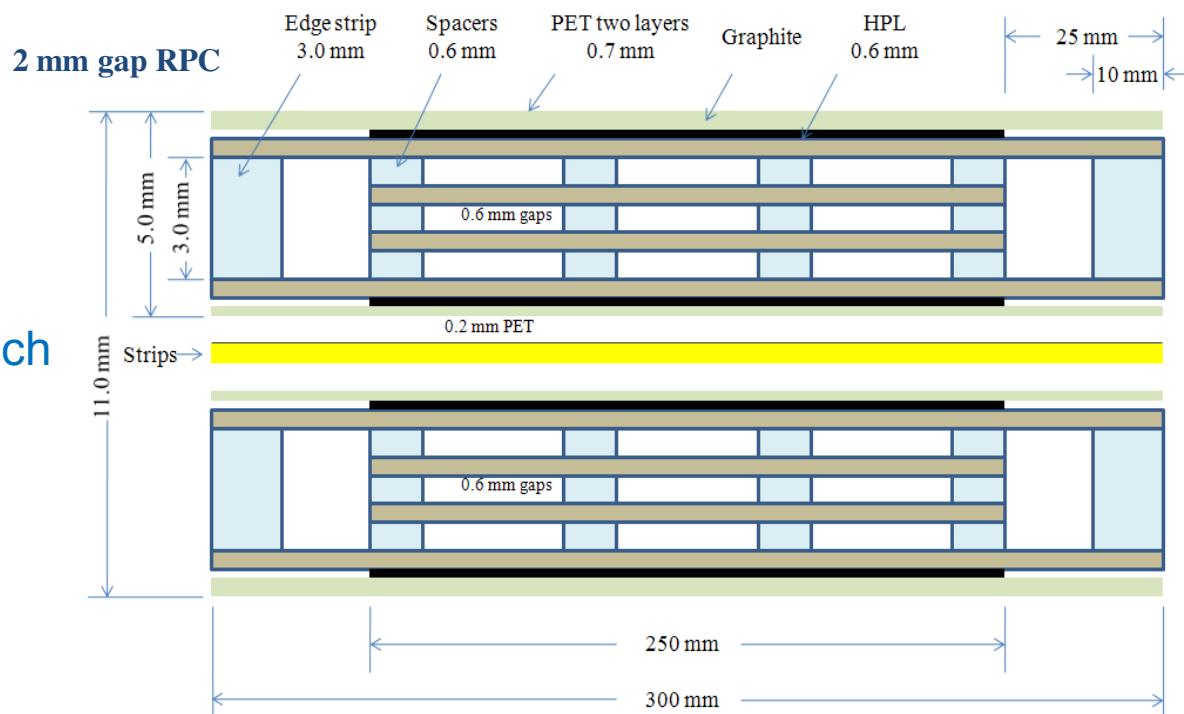


- Higher rate capability $> 5 \text{ kHz/cm}^2$
- Aiming for future muon triggers at RE1/1 for CMS
- SLHC requires faster trigger with higher background

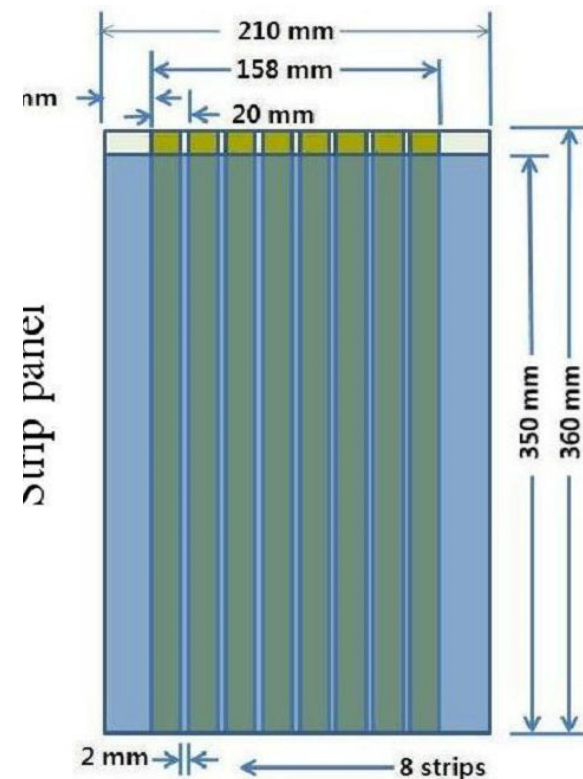
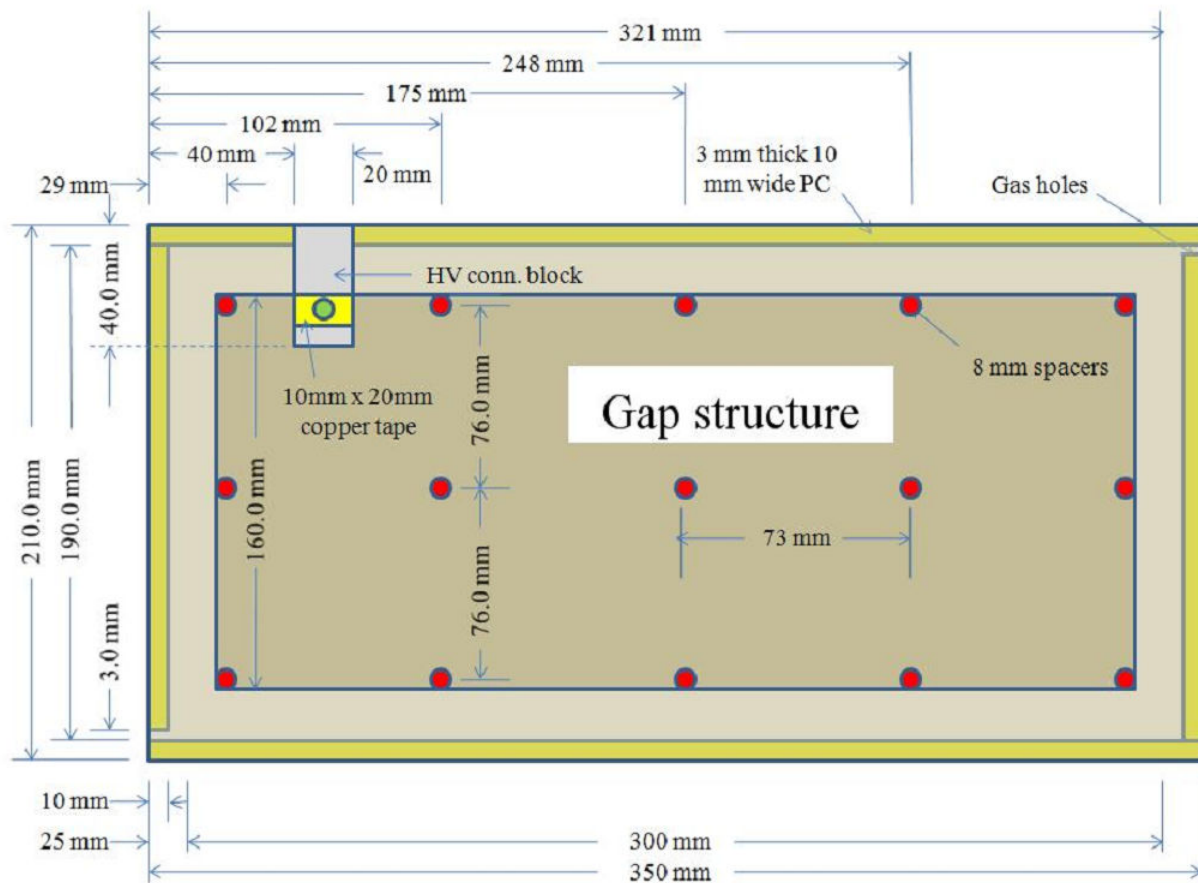
Structure of 6-Gap RPCs



Double Gap RPC in CMS
(left top picture).
We designed new RPC which
Has multiple gas layers.
(right bottom)



Constructon of 6-gap RPCs

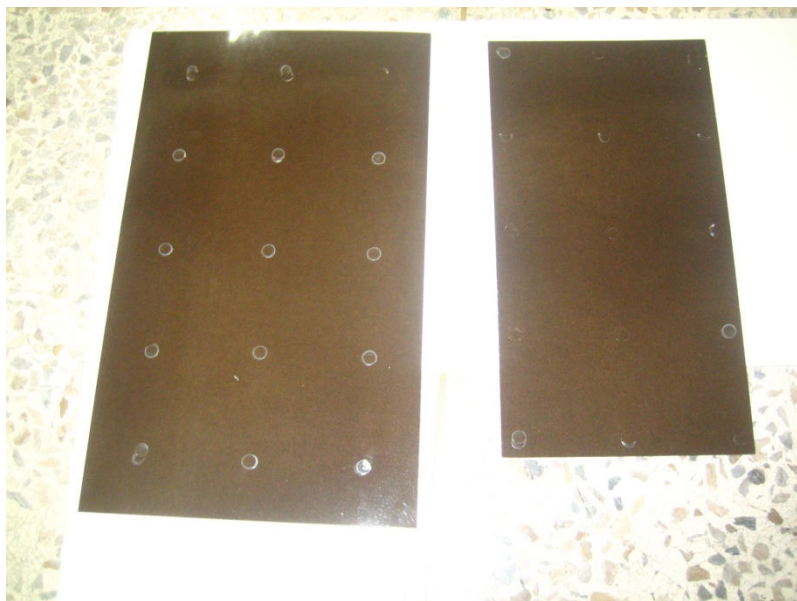


Top view of inner structure of RPC

Picture of 0.6mm thick RPC under constructing.



350mm x 210mm HPL with graphite & PET coating



HPL with attached spacers



Attached HPLs are not parallel to Each other.

Change of HPL thickness 0.6mm to 1.0mm



Ultimatum figure of assembled RPC gaps
With strip panel. And connected with high
voltage 9.2kV. Measured dark currents are
A~38 μ A at non oiled chamber
9 μ A at oiled chamber.

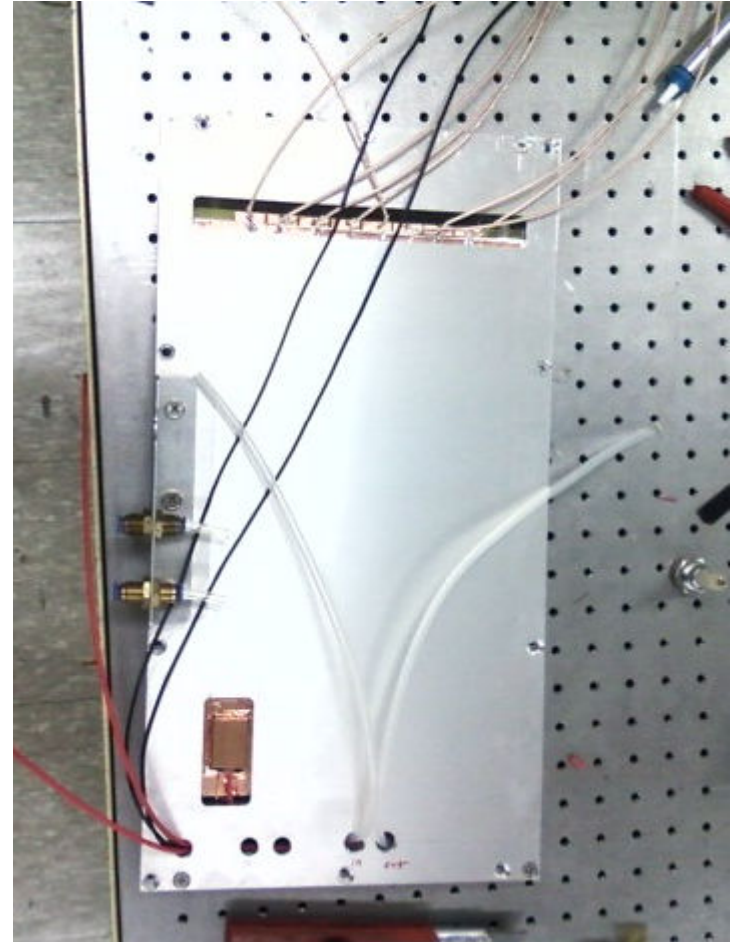


Assembled RPC chamber with 1.0mm HPL.

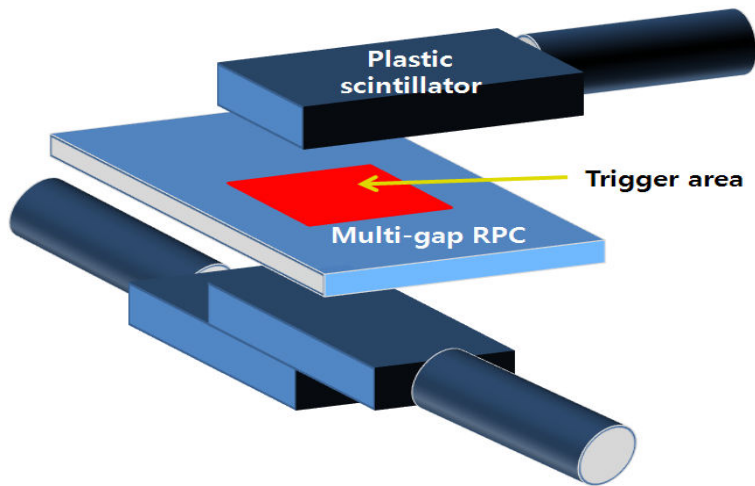


Future Test Plans

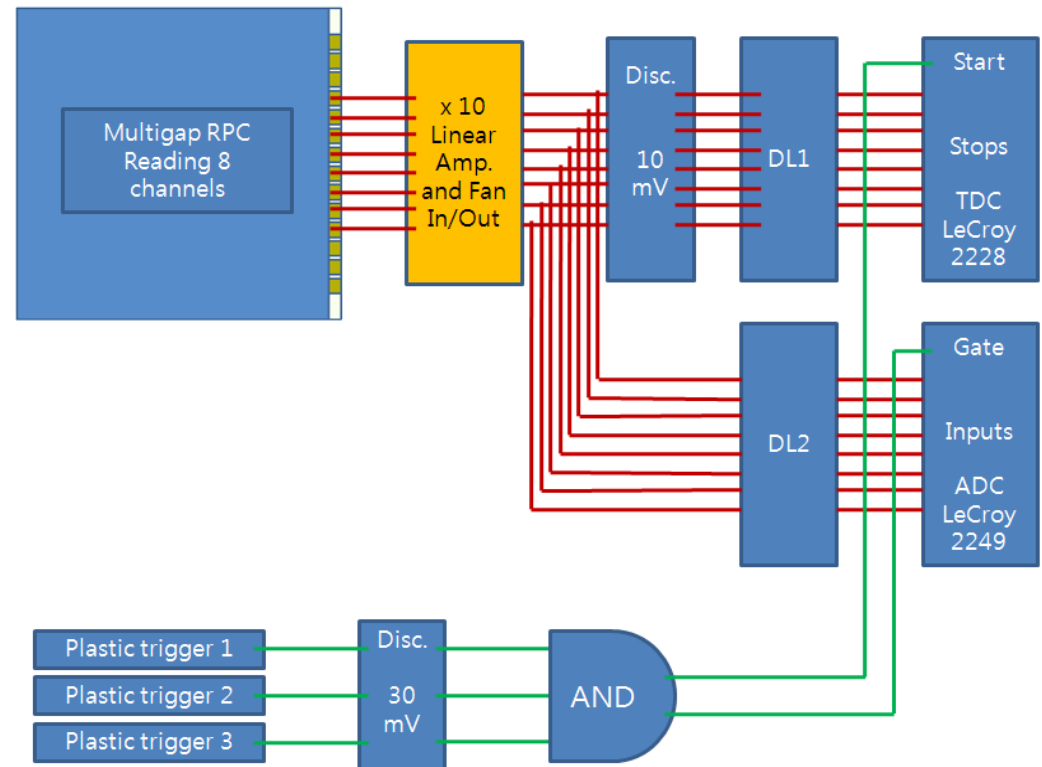
- Measuring efficiency, current, noise rate, fast charge $\langle q \rangle$
- Researching Rate capability
- Aging test



Experimental setup & Plastic scintillator trigger

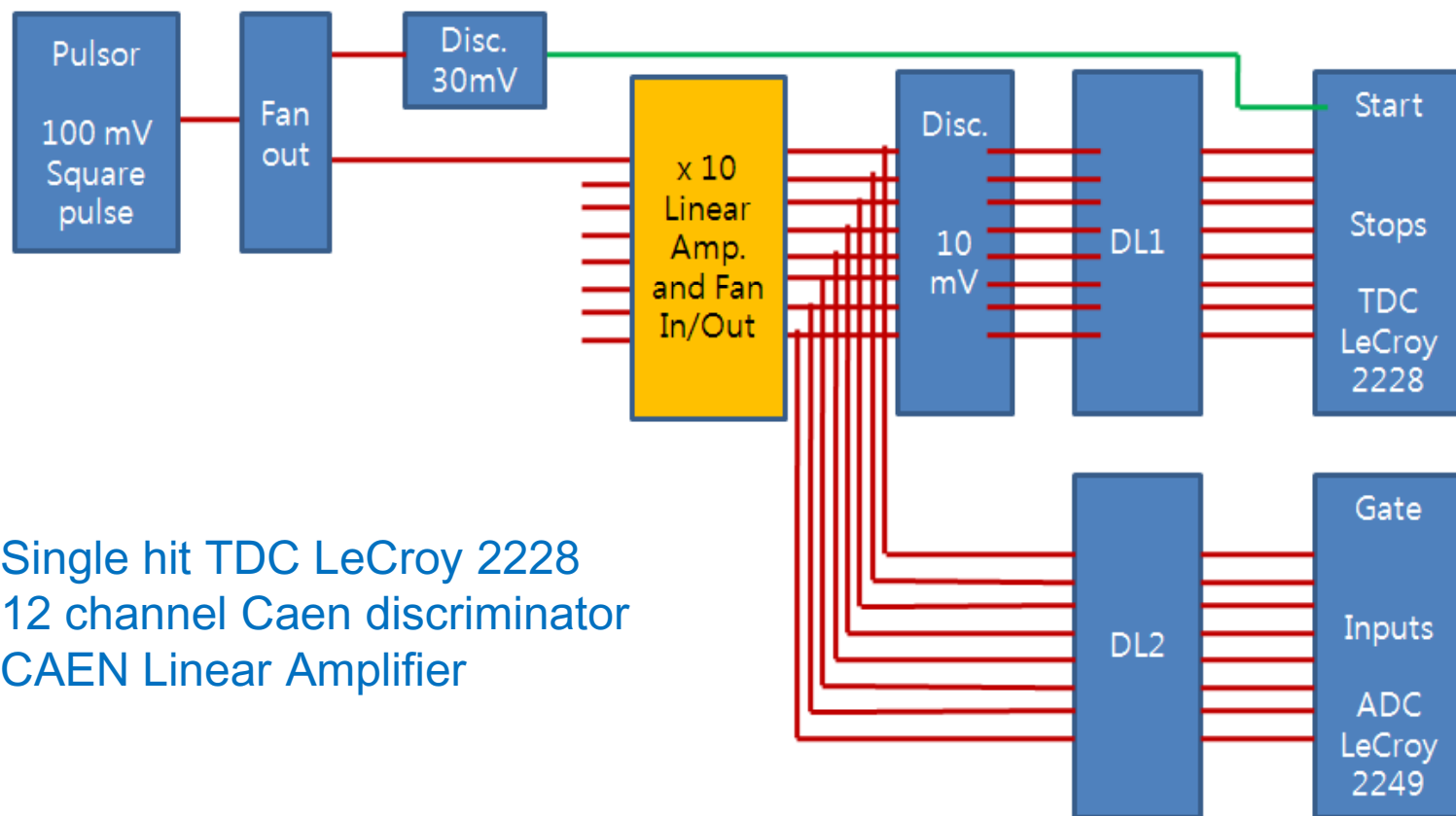


Muon event trigger method
Using plastic scintillators

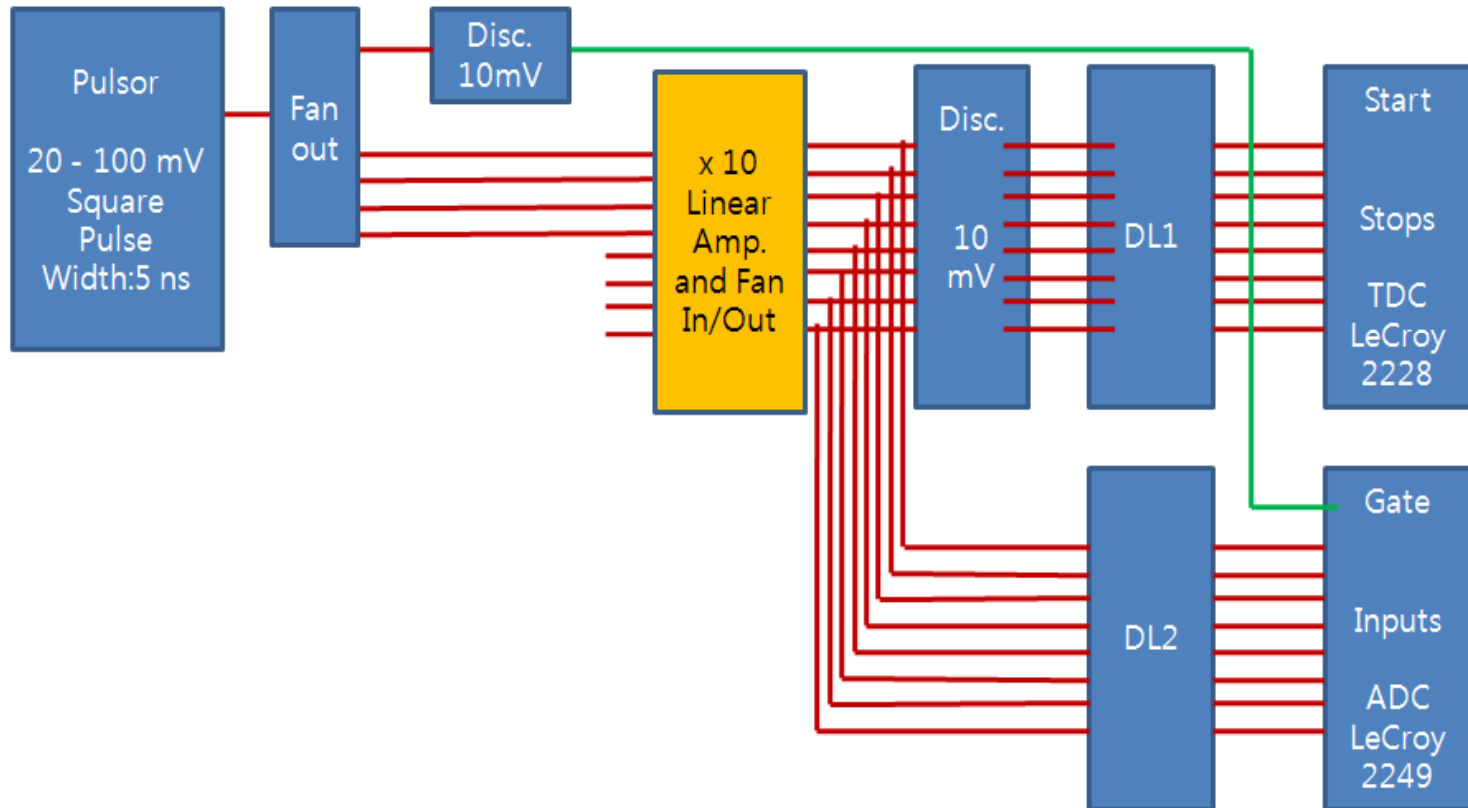


Electronics setup for efficiency and charge distribution

TDC timing calibrator



ADC charge calibration



Conclusion

- CMS need high rate capability detector in high η -region.
- We have assembled 6-gap RPCs with oiled and nonoiled for it.
- We will work out lots of experimental test of new designed RPC.