

TOF Key Plots toward TDR

AC-LGAD TOF Group

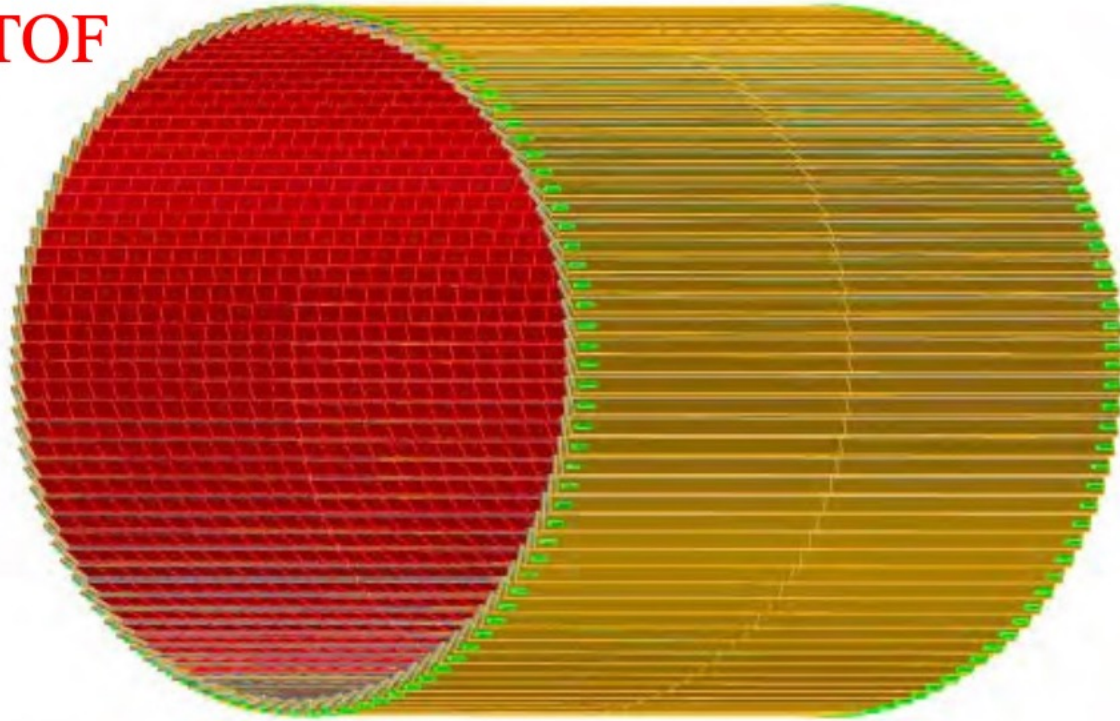
Satoshi Yano and Zhangbu Xu

Key plots

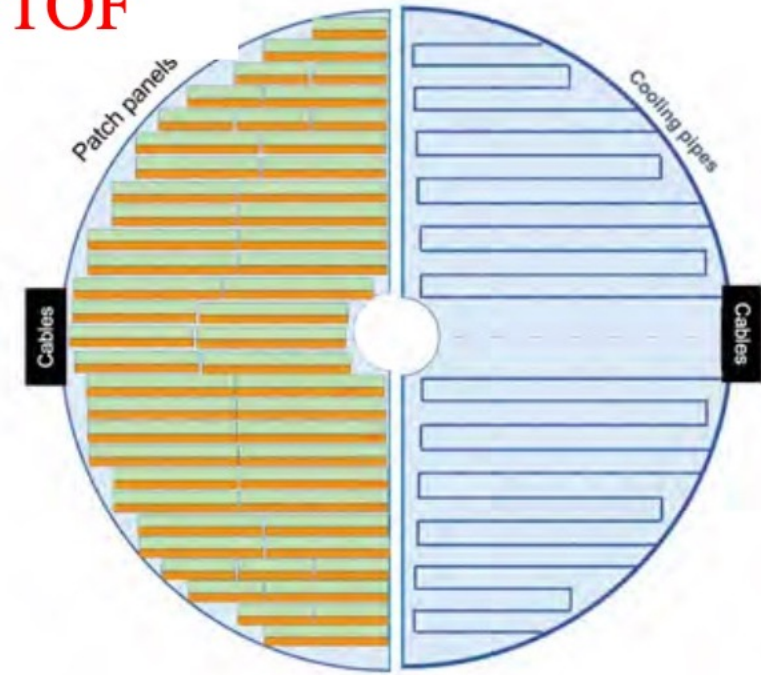
- Detector configurations and Key requirements
- Realistic Performance from R&D
- Simulations of $1/\beta$ vs p
- PID performance

Detector

BTOF



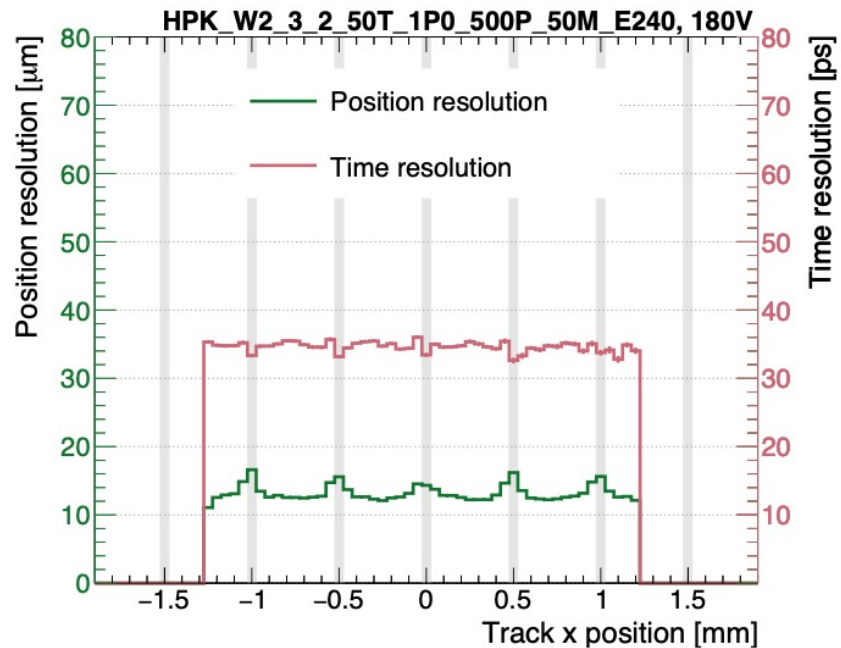
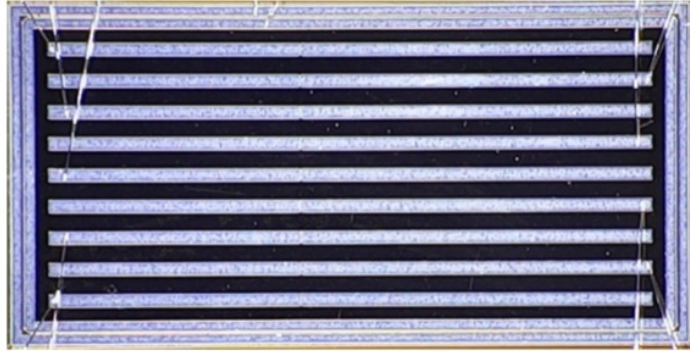
FTOF



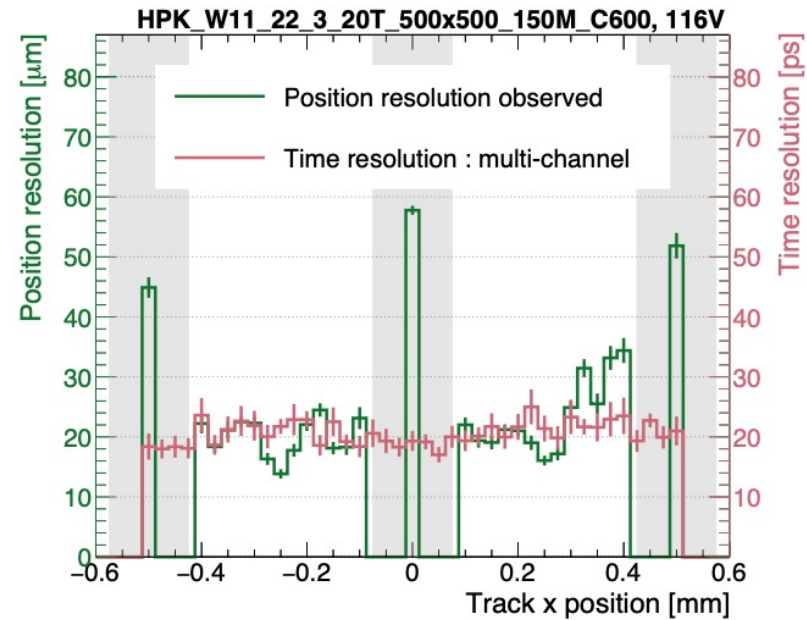
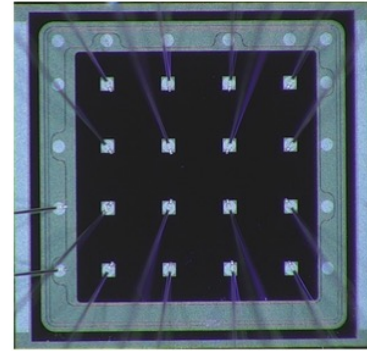
	Area (m ²)	Channel size (mm ²)	# of Channels	Timing Resolution	Spatial resolution	Material budget
Barrel TOF	10	0.5*10	2.4M	35 ps	30 μm in $r \cdot \varphi$	0.01 X_0
Forward TOF	1.4	0.5*0.5	5.6M	25 ps	30 μm in x and y	0.05 X_0
B0 tracker	0.07	0.5*0.5	0.28M	30 ps	20 μm in x and y	0.05 X_0
RPs/OMD	0.14/0.08	0.5*0.5	0.56M/0.32M	30 ps	140 μm in x and y	no strict req.
Lumi Tracker						

Position and timing resolutions from R&D

HPK Strip Sensor (4.5x10 mm²)



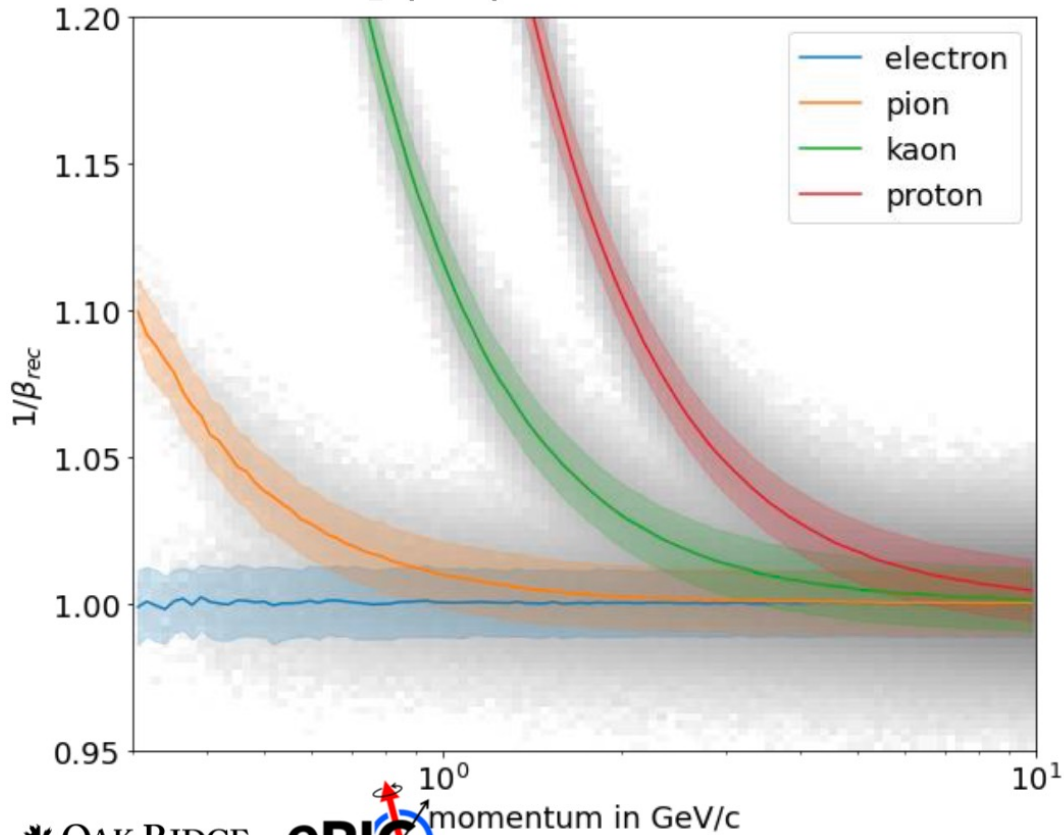
HPK Pixel Sensor (2x2 mm²)



Time-of-Flight Performance

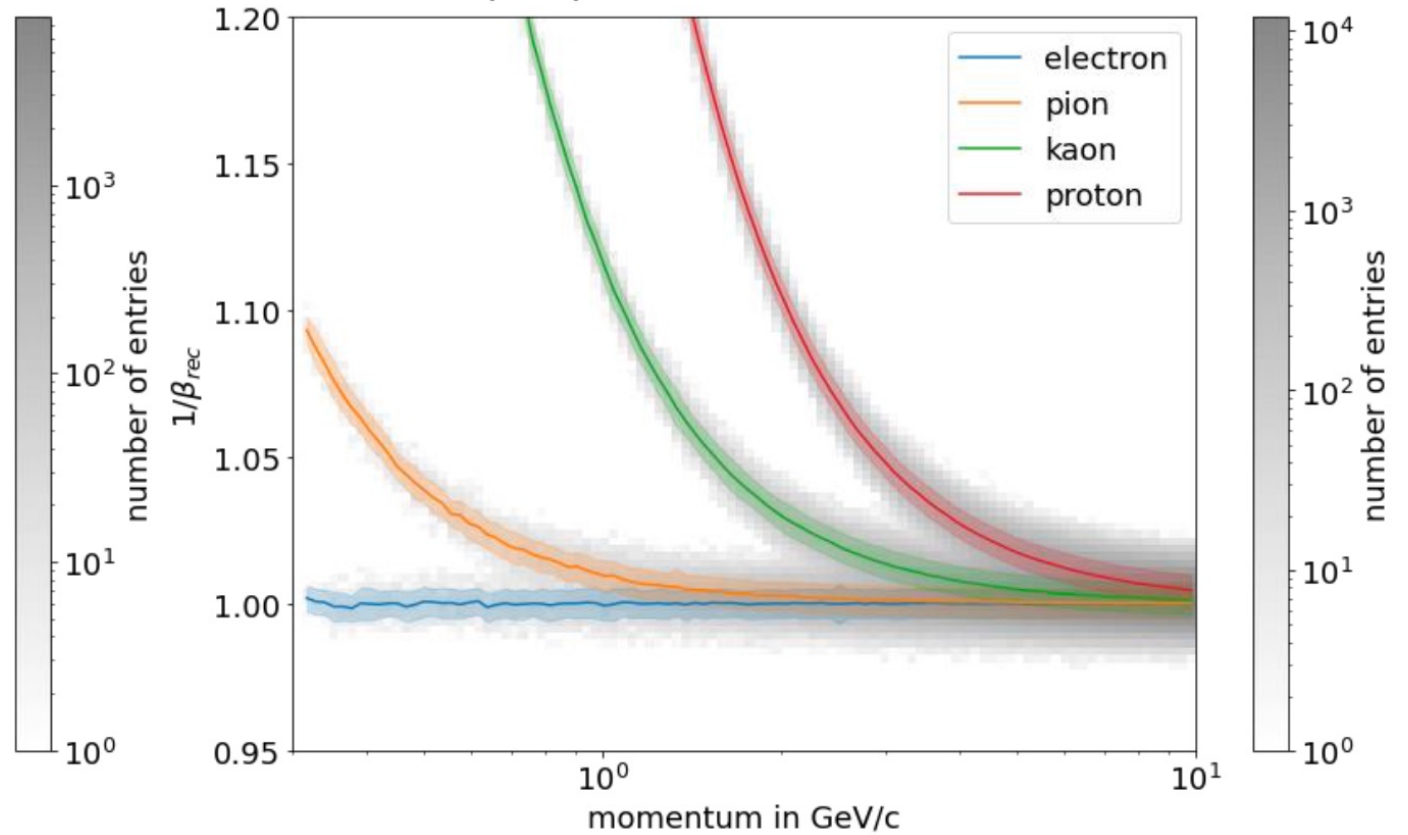
- Barrel Region

- e/pi up to 0.5 GeV/c
- pi/K up to 1.9 GeV/c
- K/p up to 3.1 GeV/c



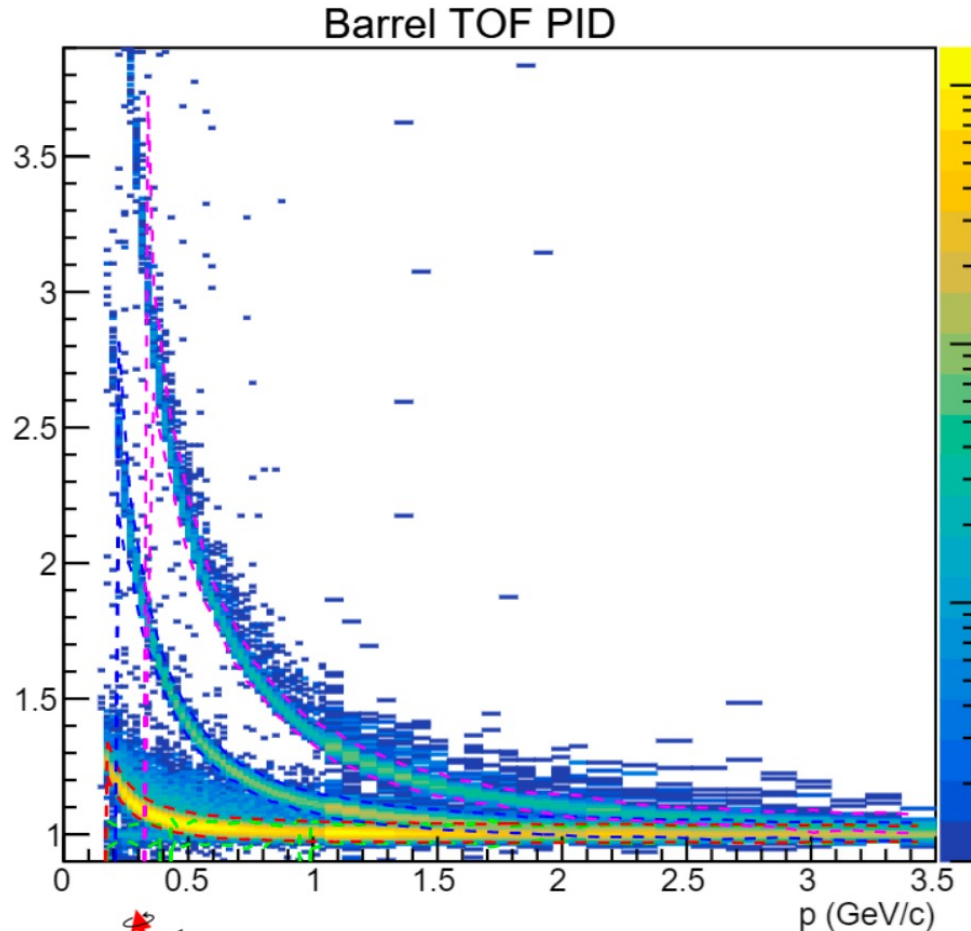
- Endcap Region

- e/pi up to 0.8 GeV/c
- pi/K up to 2.7 GeV/c
- K/p up to 4.6 GeV/c



PYTHIA DIS full simulation

PYTHIA DIS event without beam background



PYTHIA DIS event with beam background and full reconstruction

- To be done