TOF Key Plots toward TDR

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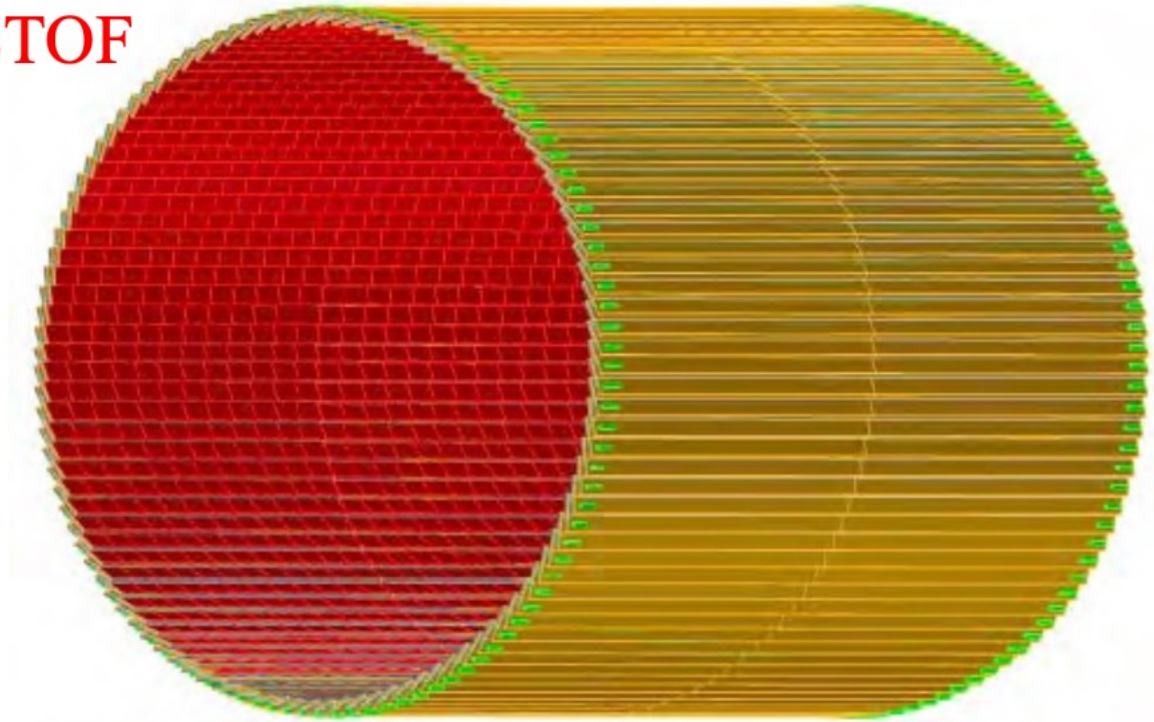
Key plots

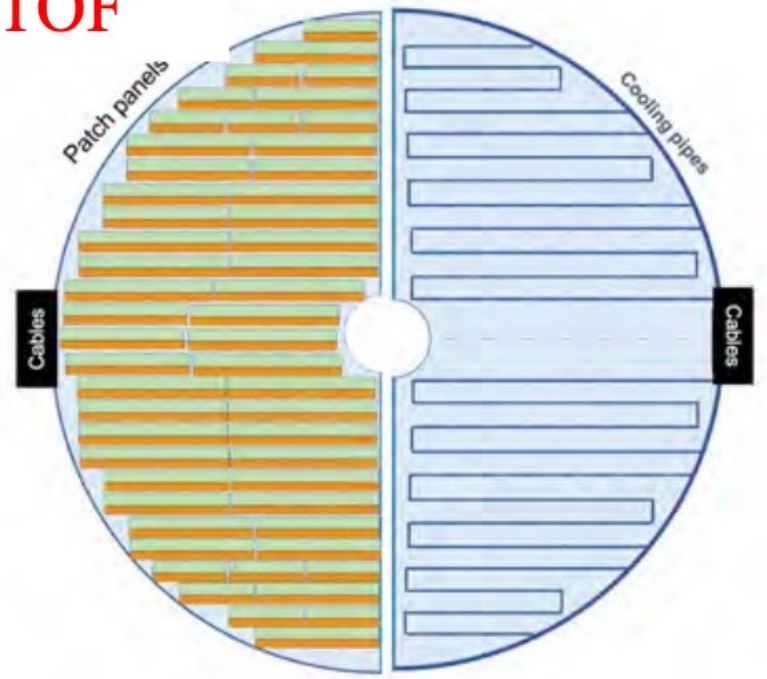
- Detector configurations and Key requirements
- Realistic Performance from R&D
- Simulations of 1/beta vs p
- PID performance

Detector

BTOF



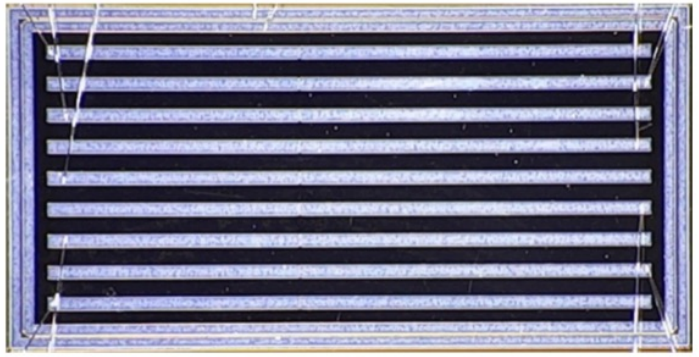
FTOF

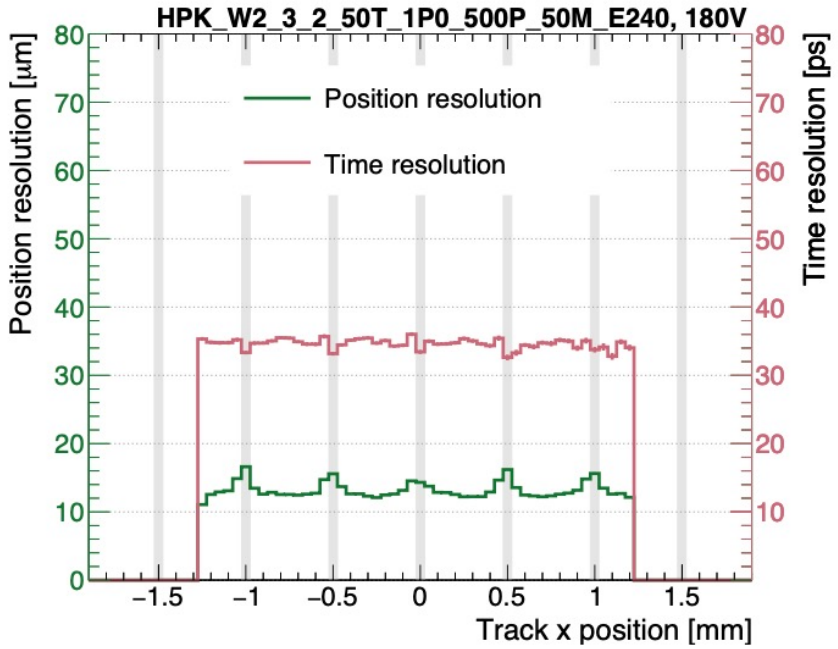


	Area (m^2)	Channel size (mm^2)	# of Channels	Timing Resolution	Spatial resolution	Material budget
Barrel TOF	10	0.5*10	2.4M	35 ps	30 μm in $r \cdot \varphi$	0.01 X_0
Forward TOF	1.4	0.5*0.5	5.6M	25 ps	30 μm in x and y	0.05 X_0
B0 tracker	0.07	0.5*0.5	0.28M	30 ps	20 μm in x and y	0.05 X_0
RPs/OMD	0.14/0.08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

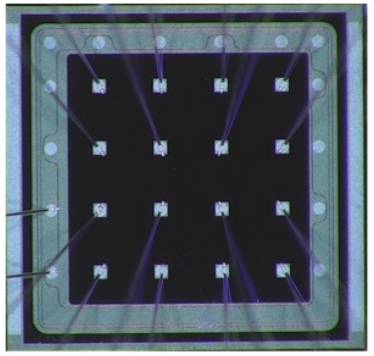
Position and timing resolutions from R&D

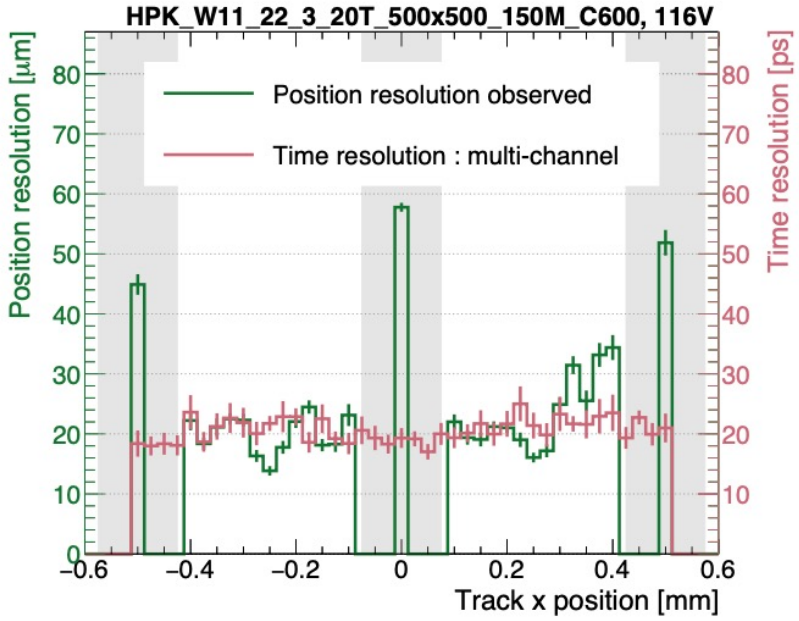
HPK Strip Sensor (4.5x10 mm²)





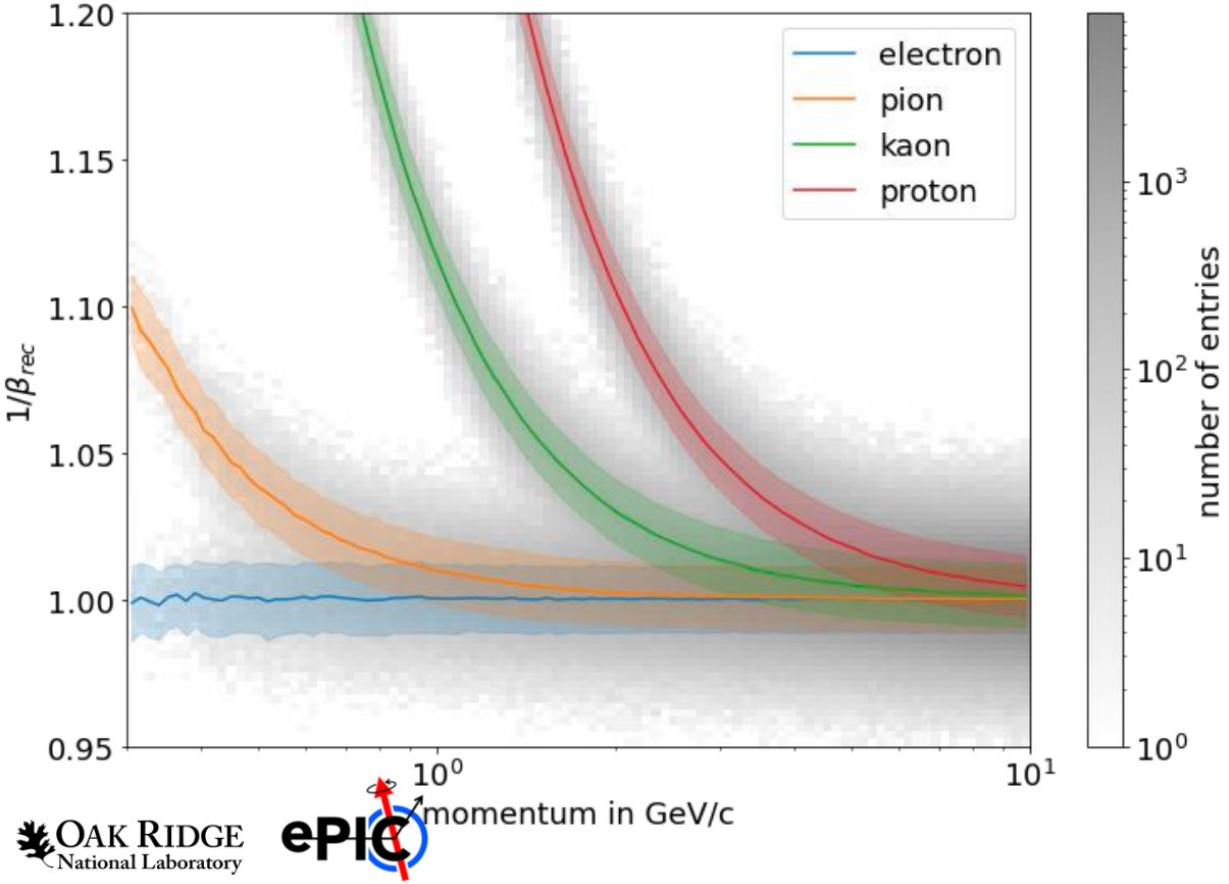
HPK Pixel Sensor (2x2 mm²)



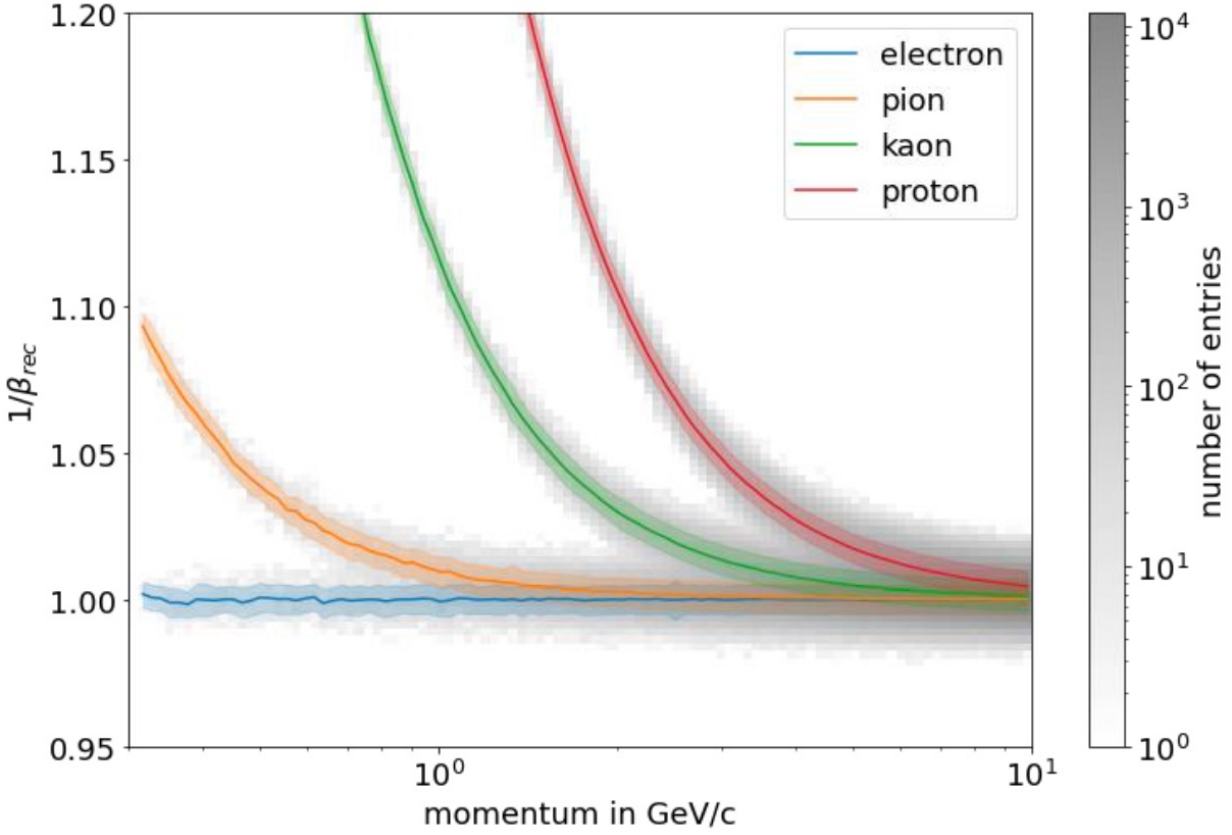


Time-of-Flight Performance

- 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

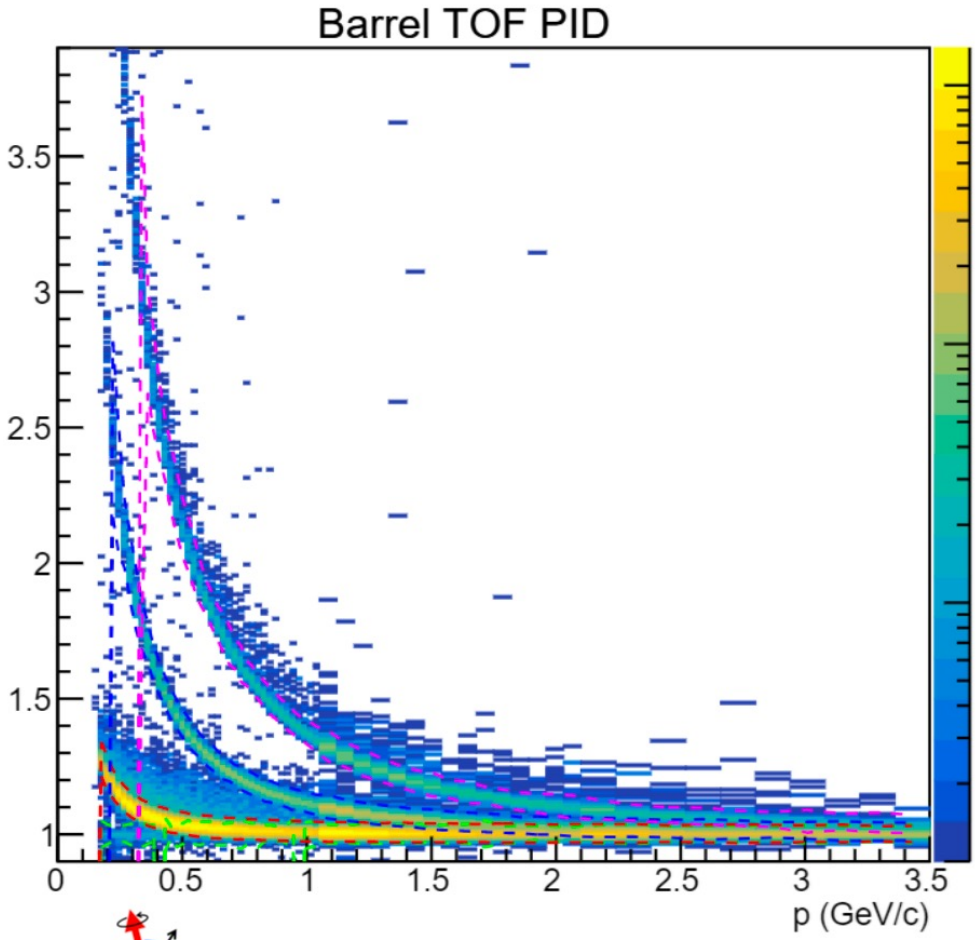


OAK RIDGE National Laboratory

ePIC

PYTHIA DIS full simulation

PYTHIA DIS event without beam background



PYTHIA DIS event with beam background and full reconstruction

- To be done