

# Advances in STCF ECAL readout electronics



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# Overall Design of Electronics

## Super Tau Charm Facility, STCF

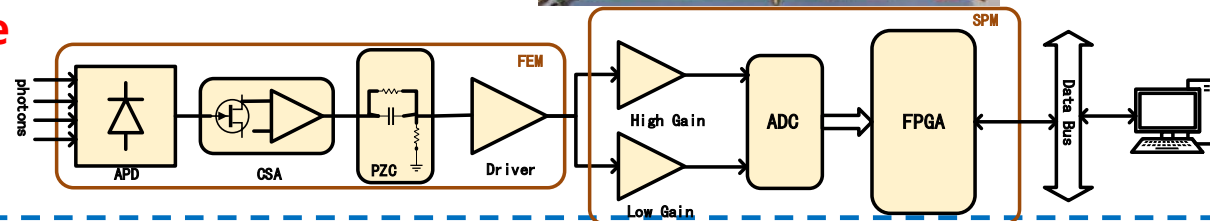
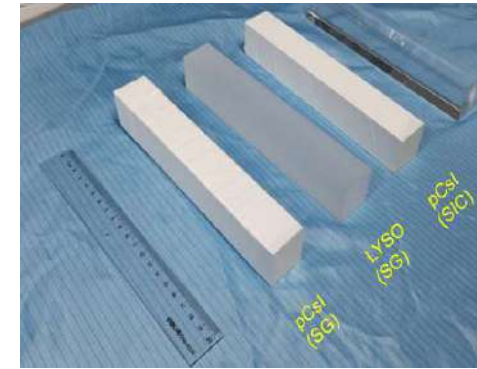
- Fast response probe spectrometer
- Collision energy: 2 – 7 GeV
- Collision brightness:  $1 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$

## Electromagnetic Calorimeter, ECAL

- Target particle: Terminal photon
- Measurement of energy at high brightness

## Challenges & Solutions

- **low noise**
  - **CSA circuit**
- **High time resolution & High Sample Rate**
  - **Time&&amplitude extraction algorithm**

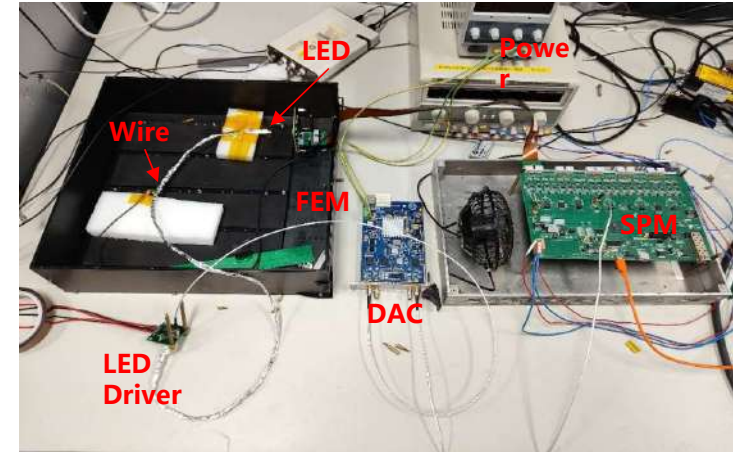




# Algorithm and Simulation Platform

## Background signal simulation platform

- LEDs are driven to emit light using a DAC controlled by FPGA and collected by an APD to simulate the background signals

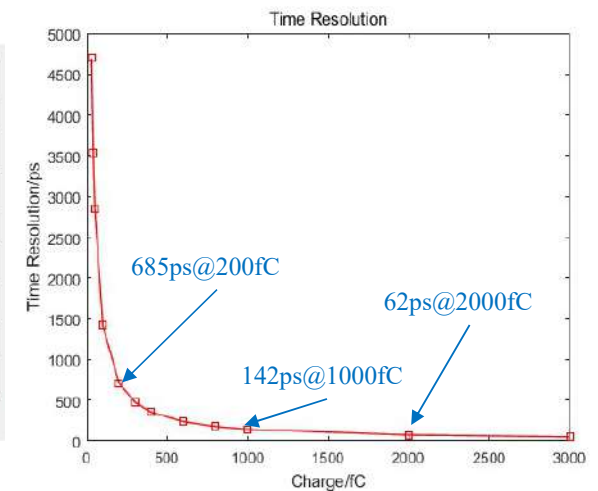
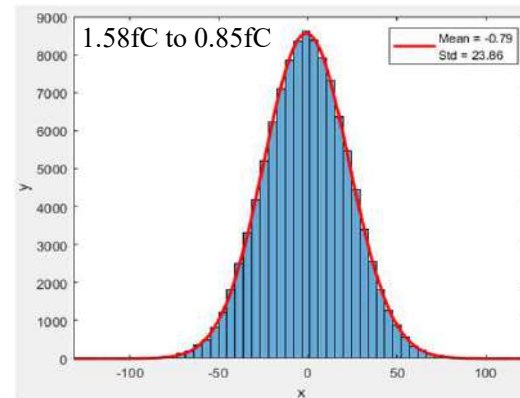


## Time&&amplitude extraction algorithm Algorithm

- Get time and energy information altogether
- Baseline noise : 1.65fC→0.85fC
- Timing Resolution: 685ps@200fC, 62ps@2000fC

## Summary

- Completed the key technical research of readout electronics





**Thank You for Watching  
&  
Welcome to Discuss**

**Session:           Poster B (#22)**

**Date & Time:   25/04/2024, Tuesday – 11:55 (Asia/Ho Chi Minh, Time Zone)**

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