RICH News and Test-Beam Overview

Rich Meeting, Jlab - 20 February 2013

RICH news

Patrizia has stepped down from RICH coordination.

THANKS Patrizia for having make the RICH project a reality !

Past 6 months:

- ✔ July-12: test-beam with electrons (Frascati)
- ✔ July-12: test-beam with hadrons (CERN)
- ✔ Dec-12: test-beam with hadrons (CERN)
- ✔ Feb12: intensive data analysis
- ✔ Jan-12: Rachel won a 1+1 year INFN fellowship (Frascati)

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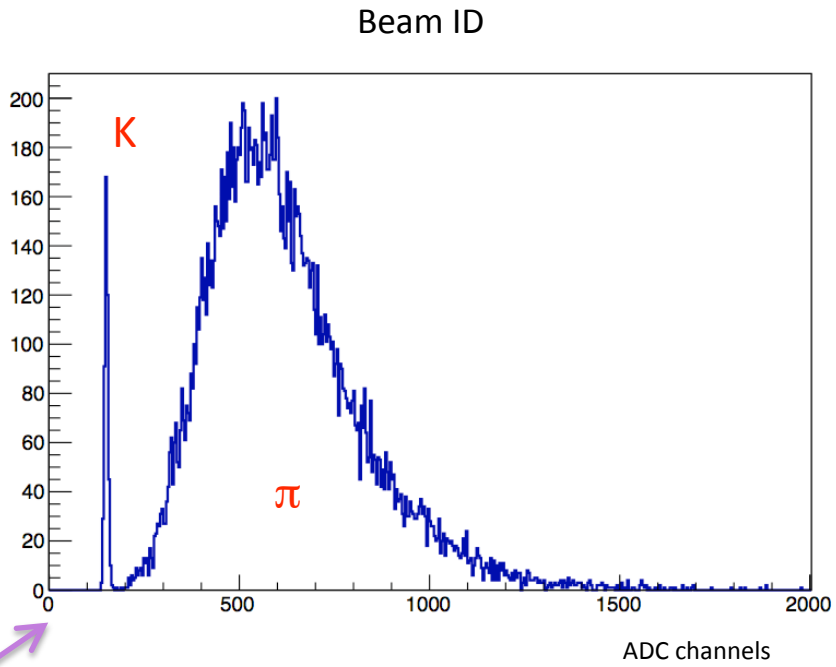
RICH Test Beam

December 2012: extensive test-beam at CERN with hadron beams

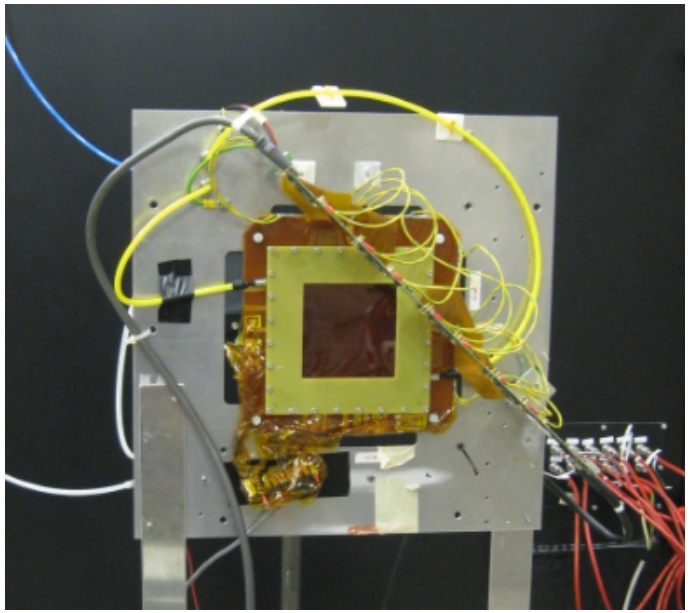
V. Lucherini, M. Mirazita, D. Orecchini, A. Orlandi, S. Pereira, A. Viticchie' (INFN-LNF)
L. Barion, M. Contalbrigo, R. Malaguti, A. Movsisyan, L. Pappalardo (INFN-Fe)
E. Cisbani (INFN-ISS)
R. Perrino, L. Lagamba (INFN-Ba)
R. Montgomery, J. Phillips (Glasgow University)
V. Kubarovsky (JLab)
M. Turisini (UTFSM, Chile)

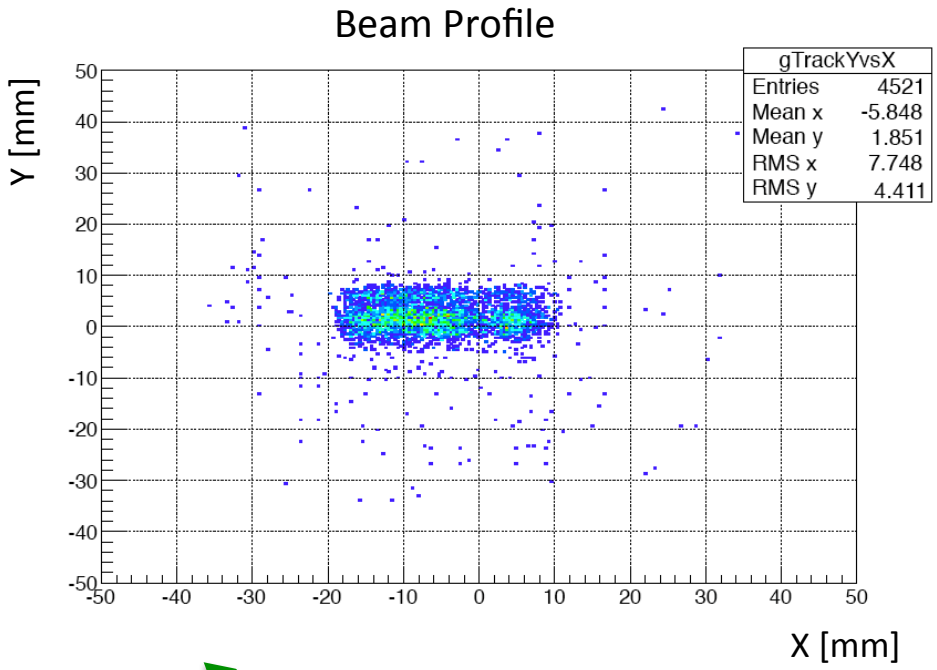
RICH Test Beam: Beam ID

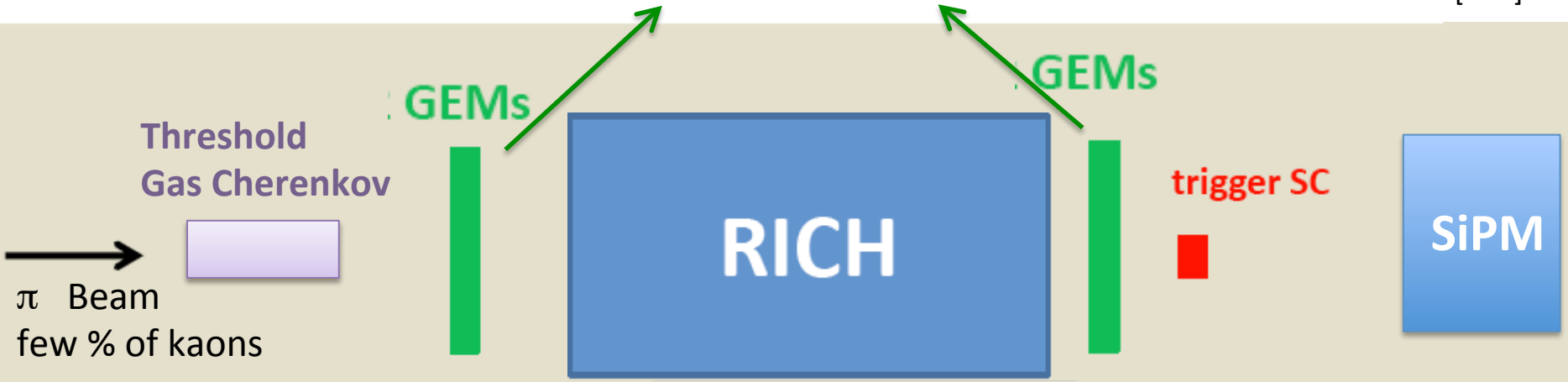


RICH Test Beam: GEM Tracking

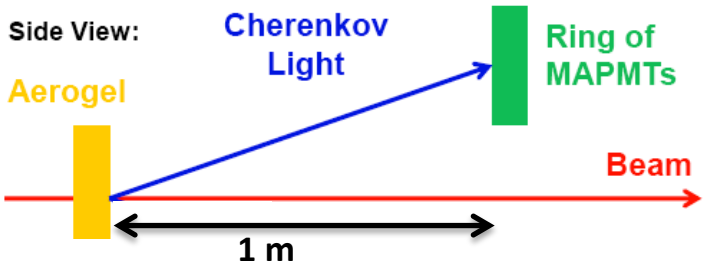
Two 10x10 cm^2 chambers with 256 strips in X and Y planes



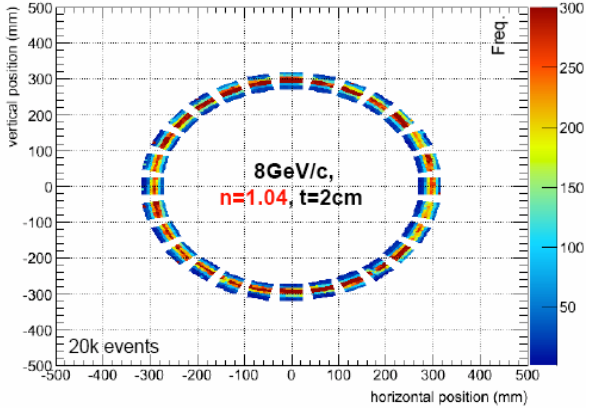


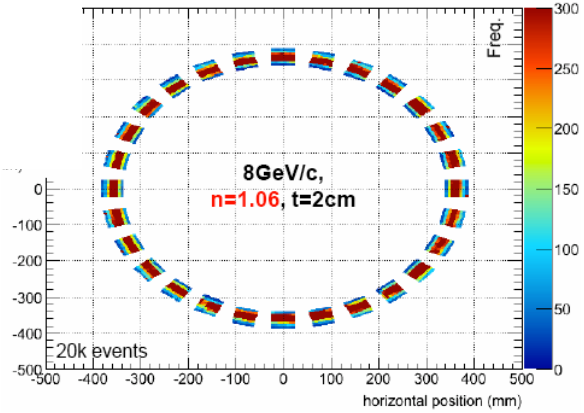


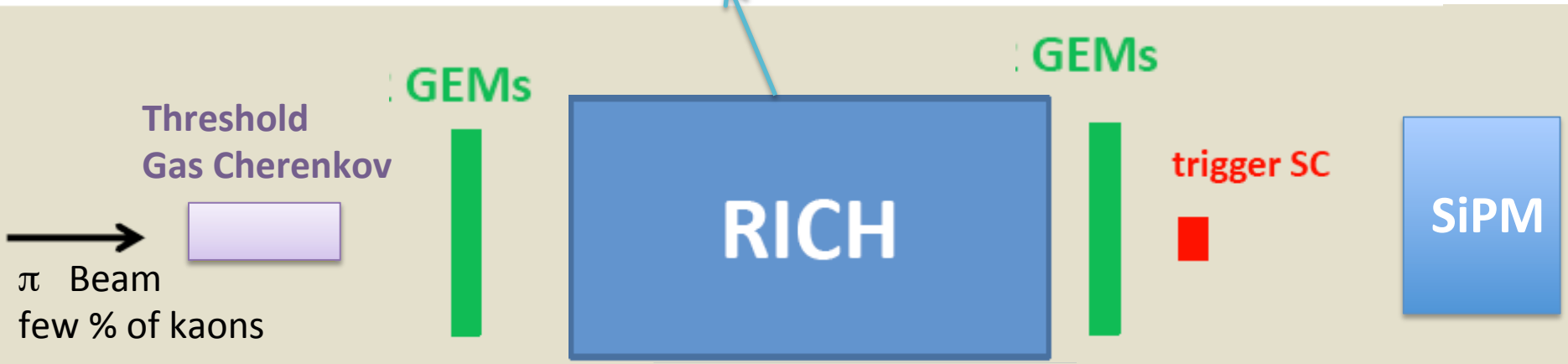
RICH Test Beam: Direct Light



Goal: measure the rejection power at 8 GeV/c within the CLAS12 geometry



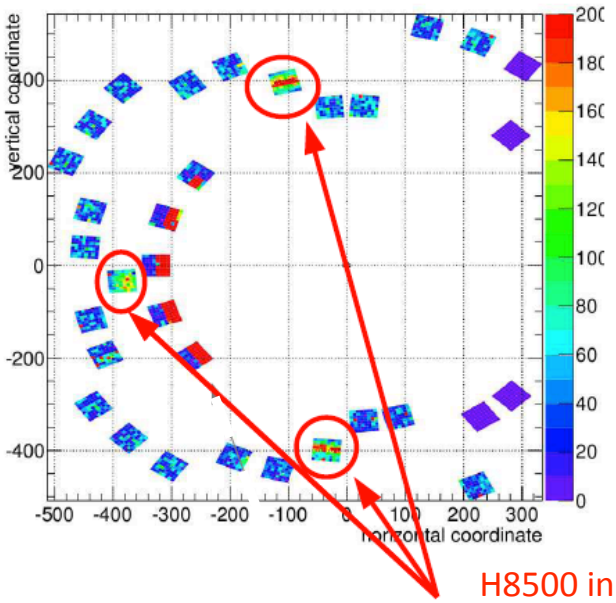




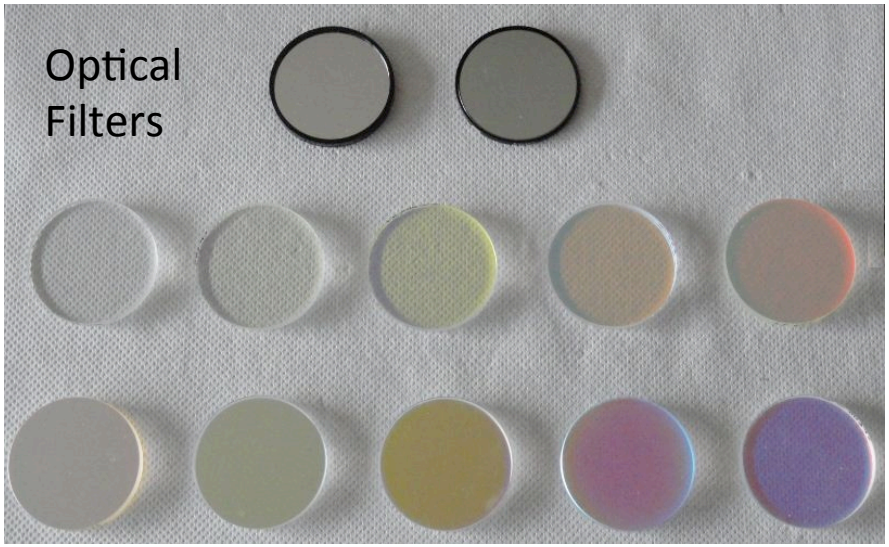
Direct Light Configuration

- ✔ Measure the kon-pion separation up to 8 GeV/c
- ✔ Study into details the Cherenkov angle resolution
- ✔ Vary aerogel thickness and refractive index
- ✔ Study background
- ✔ Study aerogel dispersion (optical filters)
- ✔ Verify LH identification

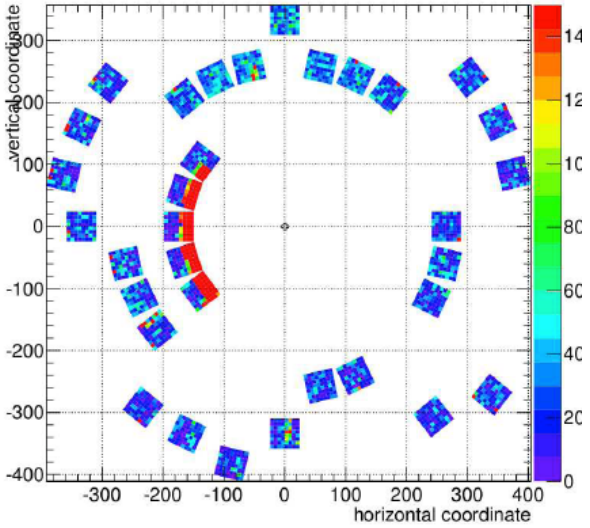
Staggered PMT runs



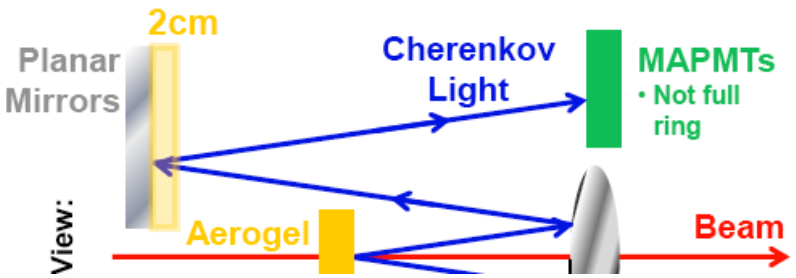
H8500 in the Cherenkov ring

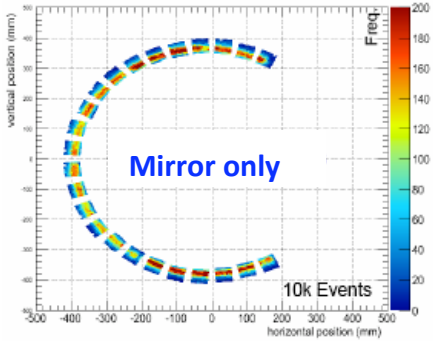


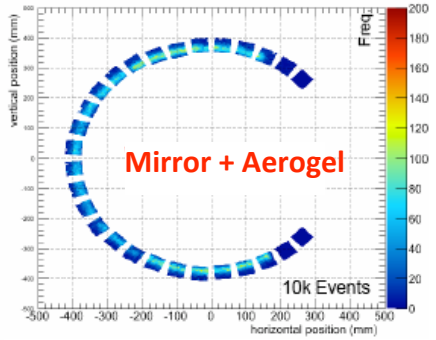
NO radiator runs

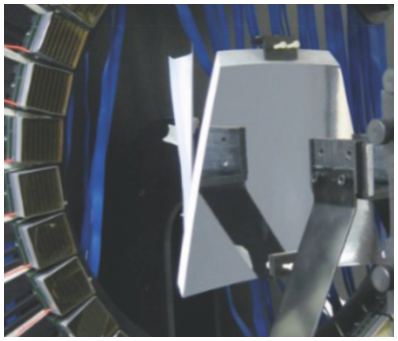


RICH Test Beam: Reflected Light

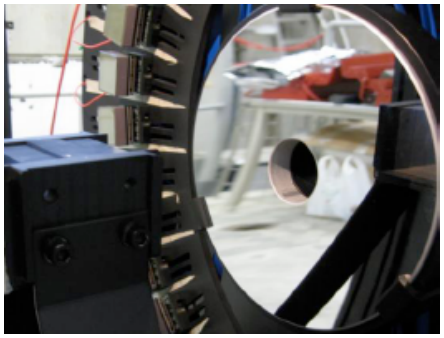




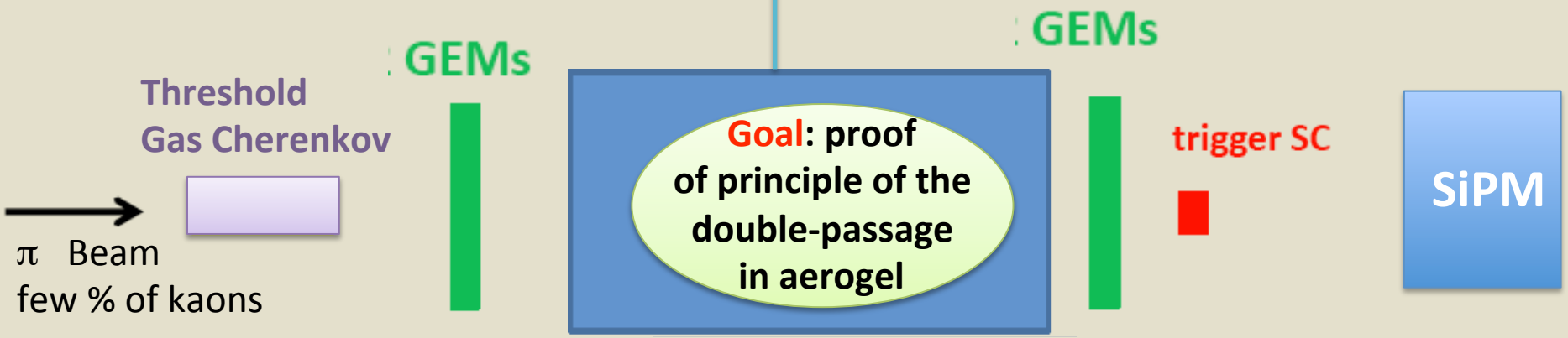




Jlab light mirror



Marcon glass mirror



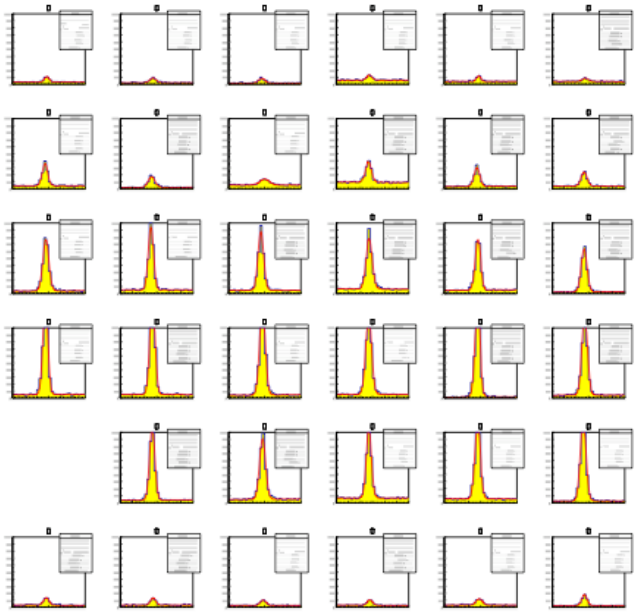
Reflected Light Configuration

- ✔ Measure the photon yield with and w/o the aerogel as absorber
- ✔ Measure kaon-pion separation up to 6 GeV/c

  The geometry is different from CLAS12 → good to tune simulations
- ✔ Compare mirror optical qualities
- ✔ Vary aerogel thickness and refractive index
- ✔ Verify LH identification

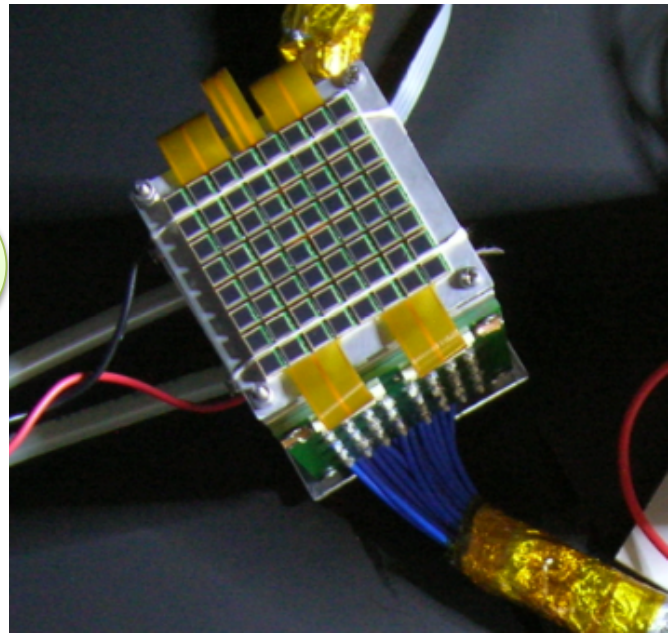
RICH Test Beam: SiPM

Cherenkov Ring Profile



Δt with trigger

Goal: compare SiPM matrix vs H8500 performances



RICH outlook

Next 6 months:

- ✔ Feb-Mar: finalize data analysis
- ✔ Feb: start engineering phase
- ✔ Mar-Apr: update the CLAS12 RICH project and CDR
- ✔ Summer: test-beam dedicated to electronics
- ✔ Summer: start procurement