

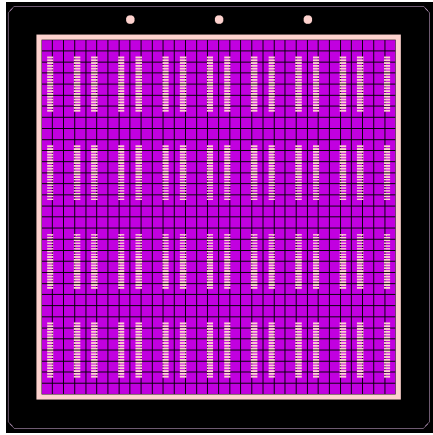
# Meeting with Makoto Tabata (Chiba University)

-> organized by the project; attended by pf(m/d)RICH representatives

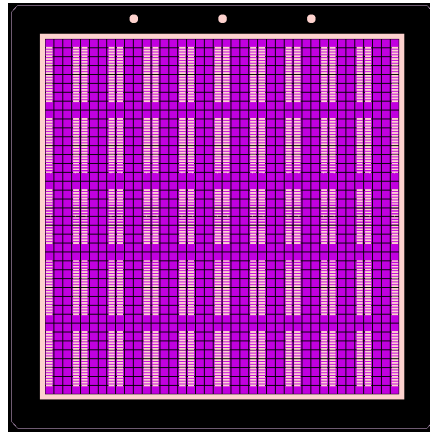
- Presently produce 15cm x 15cm x 2.5cm tiles for J-PARC ( $n \sim 1.04$ )
- Shaped by water jetting
  
- Can go up to ~20cm size
- $n-1$  variation +/- 1.5%
- $n \sim 1.03$  is the easiest to produce, and it shows highest transparency
  
- Should be possible to produce ~5cm size tiles with optical quality sides
  - No water jetting (but a special mold needed)
  
- Next steps do be defined soon (formulate more specific requirements by ePIC, request samples for beam tests, etc)

# HRPPD re-design effort for EIC

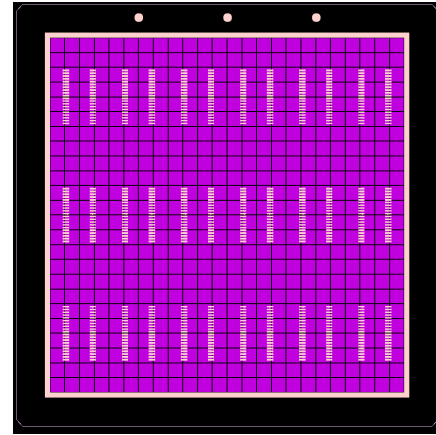
Variety of HRPPD anode base plate pixellation, with 40-pin Samtec connector footprints on the outer side



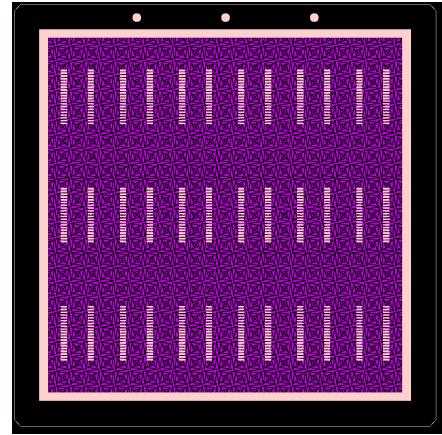
32 x 32 square pads  
(present layout)



40 x 40 square pads  
(DIRC)



24 x 24 square pads  
(pfRICH)

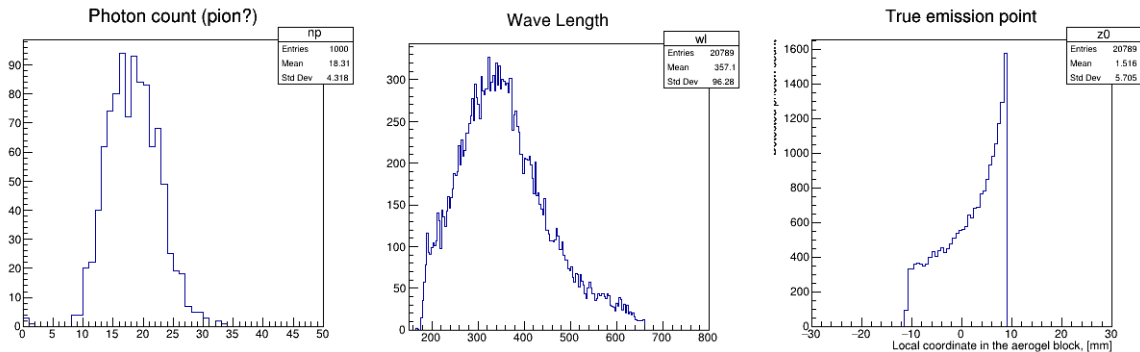


24 x 24 charge sharing  
pads (pfRICH)

- Polish ceramic manufacturer (Techtra) claims they can produce such layouts in house
- First iteration will be a test bench HRPPD tile with a mixed layout, to test them all at once
  - AK to provide a final set of drawings for this layout
  - Tooling and fabrication will take 2-3 months

# Wavelength range (last week)

- Is it really hopeless to work with aerogel in a deep UV range?



Belle II aerogel#1 in pFRICH GEANT simulations

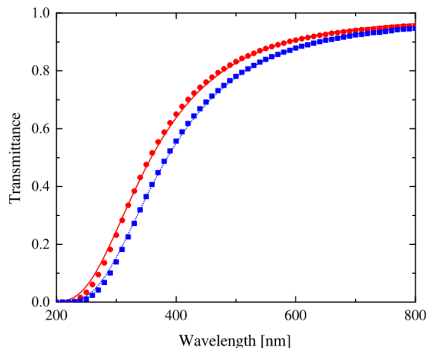


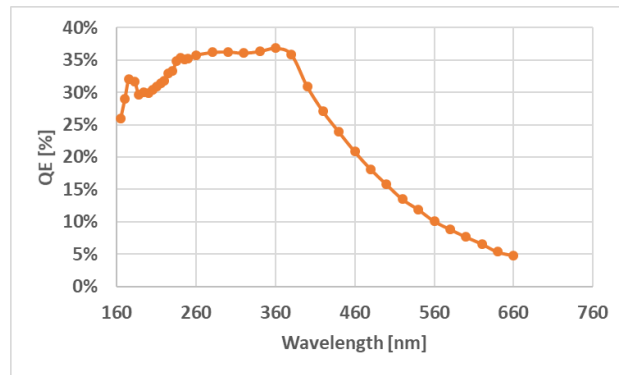
Fig. 2. Transmittance as a function of wavelength for the Belle II RICH aerogel samples of  $n = 1.045$  (red) and  $1.055$  (blue) [2]. The thickness for both samples is 20 mm. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

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<Property name="ABSLLENGTH" unit="eV">
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<value energy="5.91945">11.8578</value>
<value energy="5.42017">15.8411</value>
<value energy="5.17722">21.314</value>
```

~5mm @ 180nm (units: [mm])

$$\frac{dE}{dx} = 4\pi^2 e^2 \int_{\beta n > 1} \frac{1}{\lambda^3} \left( 1 - \frac{1}{\beta^2 n^2} \right) d\lambda$$

~5mm @ 250nm (units: [mm])

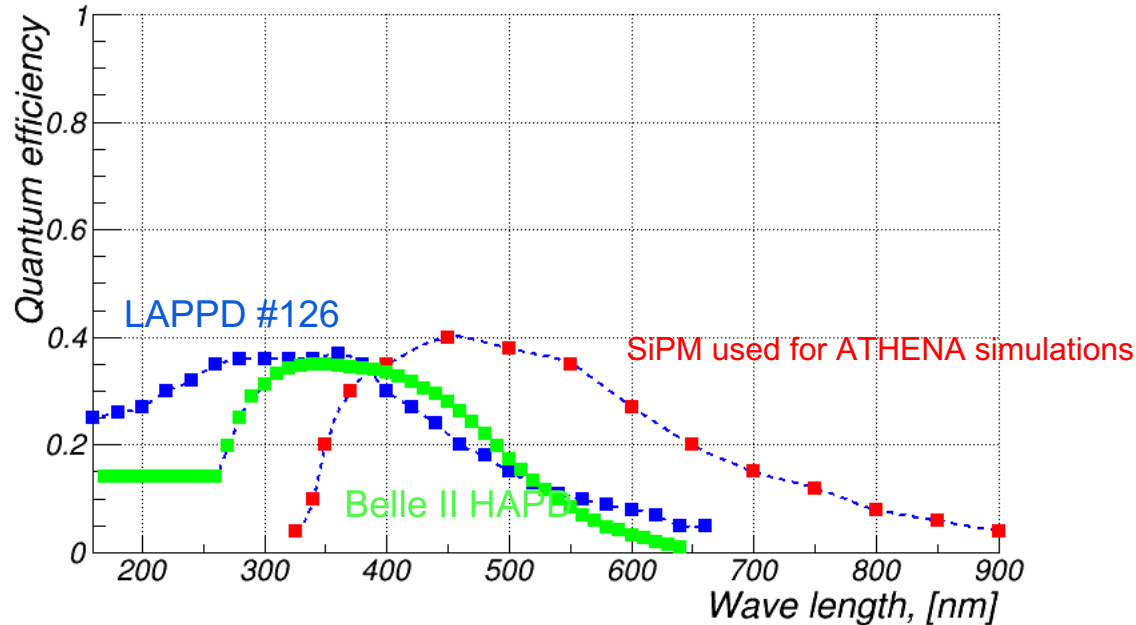


HRPPD 126 QE curve

```
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Obviously, more studies needed

# Wavelength range (update)



- Samo, Luka (Ljubljana): no acrylic filter used in Belle II
  - make use of all near UV photons within the HAPD QE range

**-> we have all reasons to do the same in ePIC pFRICH**