# pfRICH@StonyBrook
## State of play and prospects

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for the Stony Brook task force

Center for Frontiers in Nuclear Science



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# Timeline

| | |
|---|---|
| **EIC Project Detector R&D FY24 call deadline** | **July 7, 2023** |
| FY24 R&D funding availability | October 1, 2023, the earliest |
| Aerogel availability | Starting September 2023 or so |
| Work on HGCROC ASIC integration | TBD |
| HRPPD manufacturing (first five tiles) | September 2023 - March 2024 |
| HRPPD (and aerogel?) beam test opportunity | Beginning of 2024? |
| **(pf)RICH prototype beam test** | **May - June 2024** |

# Prototype

**Quadrant of a full size prototype with a matching piece of a mirror**

## Mirror

- No big differences to produce flat, conical or toroidal substrate
  $\rightarrow$ **get as close as possible to the real detector**;
- Purdue will build the substrates;
- SB will apply the coating (e.g. Al)
  $\rightarrow$ high reflectivity $\gtrsim 95\%$ for $\lambda \gtrsim 300$ nm;
- SoLID detector: Al + protective coating MgF2, allowing a high reflectance.

## Vessel

- SB will build the vessel;
- Materials: similar to the sPHENIX TPC
  (Carbon Fiber Sandwich Structure);
- Geometry?

# Some Questions

- As the mirror curvature does not follow the vessel's curvature, do we need a curved surface vessel?
- For the prototype, are we planning for the pyramidal mirrors?
- Who are responsible for the end rings and the wagon wheel to hold the aerogels and the HRPPD? Include in the vessel design?

# Task force

- Abhay Deshpande (faculty)
- Thomas Hemmick (faculty)
- Charles-Joseph Naïm (postdoc)
- Jaydeep Datta (postdoc)
- Wenliang Li (postdoc)
- Brynna Moran (student)
- 1 other student possible

**Weekly meetings at Stony Brook in next weeks for the action plan**