

# Introduction

Proposed agenda for today:

- (This) introduction
- Update on sensor characterization — Nicole Apadula
- Update on sensor characterization — Mathieu Benoit
- AOB

# Introduction

A few important dates and events:

- **Project R&D** — eRD104, eRD111, eRD113 — proposal deadline upcoming July 7, 2023
  - Detailed call reproduced on the next slide, for reference,
  - Not too soon to get started,
  - Request progress reports from all efforts at our meeting in two weeks, i.e. June 6, 2023
- **Generic R&D** — call is imminent; anticipate a deadline of upcoming July 14, 2023
  - See Dave Mack's presentation at the recent 2<sup>nd</sup> detector workshop, c.f. <https://indico.bnl.gov/event/18414/contributions/76155/> (slide 27)

# Project R&D

Dear current and future R&D participants,

it is time to discuss the next steps in our path, i.e., the FY24 projects. We are trying to get the R&D program fully in sync with the FY boundaries.

## Proposals

1. Please submit your proposals and progress reports (where applicable) to us by July 7, 2023. We aspire to have a DAC meeting well in time to prepare for contracts at the beginning of FY24.
2. We expect progress report from all ongoing projects eRD101 to eRD113. What milestones were achieved. How did our understanding improve. What is left to do?
3. eRD102, eRD103, eRD104, eRD106, eRD107, eRD108, eRD109, eRD110, eRD111, eRD112, and eRD113 may submit continuation proposals if and only if technical risk milestones remain.

These new proposals should be relatively straightforward to write. Keep them short and concise. List whatever technical risks remain, the milestones, deliverables, and two money matrices showing cost/item and funding/institution to close those remaining risks. Also list the representatives for each institution. List all participating members and institutions on the front page. Please also give, if applicable, an outlook for the years past FY24.

Be aware that R&D should not be mixed with PED. If you are not sure, talk to us. The proposals should concentrate on detector R&D tasks that mitigate project detector technical, risk.

## DAC Review Meeting

With the project detector R&D expected to dwindle down at CD-2, we will limit the meeting to a two-day review meeting in the July-August period. The FY24 proposal goals of all continuation projects should be presented as well as a short status report of all FY22/FY23 proposals. More details on this meeting will be announced soon.

Best regards,

Elke, Rolf, and Thomas

P.S. Please distribute this email among your institutional reps/contacts in your project. Thanks!

## Scope of the Generic Detector R&D Program

This program will support advanced R&D on innovative, cost-effective detector concepts which reduce risk and that either the one detector in the project scope or a second detector could incorporate. (The term "generic" conveys this duality.) The program is supported through R&D funds provided to Jefferson Lab by the DOE Office of Nuclear Physics, and is open to all segments of the EIC community. It is expected to be funded at an annual level of \$2M, subject to availability of funds from DOE NP.

In a nut-shell:

- EIC-related R&D
- Aimed at Detector 2, or upgrades of Detector 1
- Proposals accepted from across the world from universities, laboratories, and companies
- Features of a proposal that add value: increase physics scope, reduce risk, cost effective, innovative etc

(Also: we need to stay orthogonal to other sources of federal funding such as EIC project R&D, the SBIR program, etc.)

# ePIC Silicon Vertex Tracker

## Detector Subsystem Collaboration for the Silicon Vertex Tracker subsystem

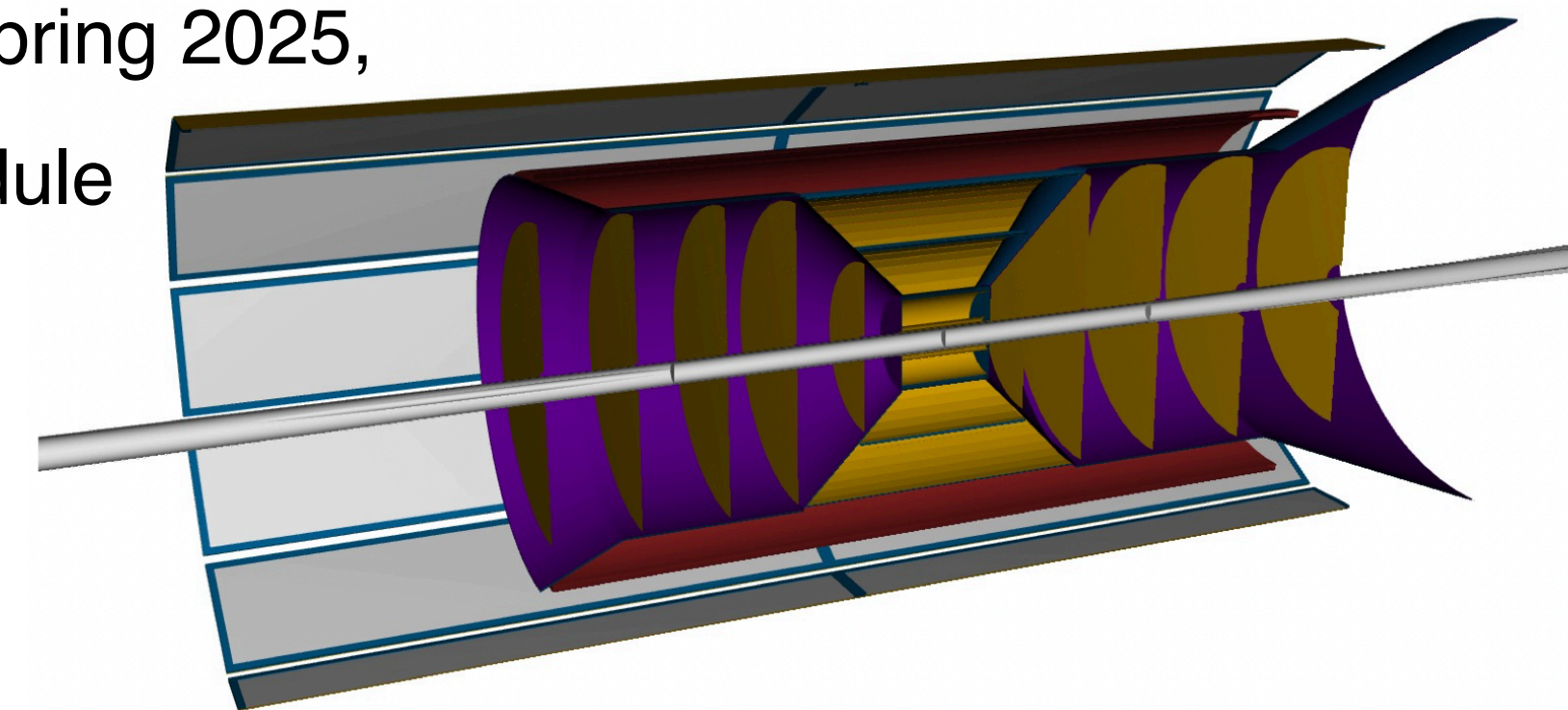
The SVT subsystem is described on the [wiki](#); it is based around a 65nm MAPS sensor and currently consists of five barrel layers (L0—L4), five disks in the hadron-going direction (HD0—HD4), and five disks in the electron-going direction (ED0—ED4).

The **SVT R&D phase** is ongoing. Relevant timelines include:

- EIC vertex sensor qualification in September 2026, concurrent with ALICE-ITS3
- EIC Large Area Sensor production start in February 2027

The **SVT construction phase** will (mostly) follow the R&D phase. Relevant timelines include:

- CD-3, Approve Start of Construction / Execution, is currently anticipated for Spring 2025,
- SVT construction is estimated to take 3—4 years in a technically driven schedule



# ePIC Silicon Vertex Tracker Collaboration

Thanks for your inputs so far, including Doodle!

Our **kickoff meeting** will be on **Friday June 9, 2023** between 10am and 3pm EDT (with a break)

## Goals:

- Agreed-on work packages
- How the work will be shared during the remainder of the R&D phase and during construction,
- Create common understanding of the current SVT baseline to facilitate efficient collaborative work.

**This will work only if we all come prepared;** who will be your institutional contact, where you and your colleagues' interests are in the SVT, and how and with which resources you intend/plan to contribute (during the remainder of R&D and during construction) — **a few concise slides will do!**

# ePIC Silicon Vertex Tracker Collaboration

## Detector Subsystem Collaboration for the Silicon Vertex Tracker subsystem (SVT)

### Imperative to advance our earlier initial discussions on:

- Who will participate (during the remainder of the R&D phase, and during construction)?
- Who will do what?
- What resources are available to / within the SVT-DSC?
- What is not covered or missing?

*Initial* discussions may be found e.g. at <https://indico.bnl.gov/event/17418/>. That is, we are not starting from ground zero, but we certainly are not “locked in.” These discussions simply need updating and revision — one of the goals for the kickoff meeting on June 9, 2023.

**Work package structure** — multiple ways to do it. Next slide has a possibility; feedback sought and welcome.

WP1	Sensor development	<ul style="list-style-type: none"> <li>Design</li> <li>•Contribution to ITS3 ER2 and ER3</li> <li>•EIC LAS v1, v2, production</li> <li>Characterisation</li> <li>•Lab, test beam, irradiations</li> </ul>	(Most closely related to eRD113 project R&D)
WP2	Mechanics and cooling	<ul style="list-style-type: none"> <li>•Mechanics of bent vertex layers</li> <li>•Air cooling for vertex layers</li> <li>•Support structure for sagitta layers and disks</li> <li>•Cooling for sagitta layers and disks</li> </ul>	(eRD111 project R&D)
WP3	Sensors electrical interfaces	<ul style="list-style-type: none"> <li>•FPC from sensors to end of layers/disks</li> <li>•Wire bonding (sensor to FPC)</li> <li>•Connection to services (FPC to services)</li> </ul>	(Aspects within eRD111 project R&D scope)
WP4	Readout and powering	<ul style="list-style-type: none"> <li>•Power regulator; SP architecture (data transmission, current source, grounding)</li> <li>•On-/off-sensor data handling, full chain until FELIX</li> </ul>	(eRD104 project R&D)
WP5	Integration	<ul style="list-style-type: none"> <li>•Overall mechanical support and integration</li> <li>•Detector cabling (i.e. cables and routing)</li> <li>•Power supplies and cooling plant</li> <li>•Close collaboration with project engineers</li> </ul>	(Aspects within eRD111 project R&D scope)
WP6	Simulations	<ul style="list-style-type: none"> <li>•Link to tracking working group</li> <li>•(Detailed) SVT detector description</li> </ul>	
WP7	Interlocks, slow control, run control, monitoring	To be activated later on	



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