

News

- **Incremental Design and Safety Review on ePIC PID detectors conducted on July 5-6**
 - Review [presentations](#); Close-out [slides](#); Final review [report](#)
- **EIC Project Detector R&D Review on Aug 28/31**
 - FY23 report and FY24 [proposals](#); Review [presentations](#); Close-out [slides](#)
- **ePIC TOF Project Engineering Design**
 - **Mechanical engineering** : support structure and cooling submitted on **June 27**: [Mechanical PED](#)
 - **Electrical engineering** : Low-jitter clock in DAQ, **TOF RDO included in eRD109 FY24 proposal**
- **ePIC TOF DSC**
 - **Working on schedule and cost, identify institutional responsibilities and L5/L6 contacts**
- **ePIC TOF Simulation**
 - TOF in tracking – **Nicolas: fixed the tracking issue with full forward TOF geometry; re-evaluate the TOF impact on tracking**
 - TOF PID reconstruction – Oskar/Zhenyu: reconstruction, validation plots
 - TOF digitization – **Zhenyu: updated digitization parameters (see page 2); Adam/Souvik: charge sharing and detector noise**
 - TOF service in simulation – TBD: implement the missing material for mechanical support structure, cooling and cabling
- **ePIC Collaboration meeting at ANL on January 9-13, 2024**
 - AC-LGAD parallel session survey: <https://forms.gle/LcLjyFq7ThfasYdJ9>
 - TOF DSC parallel session survey: <https://forms.gle/jMGqp7vrQsRmJ7Vw8>

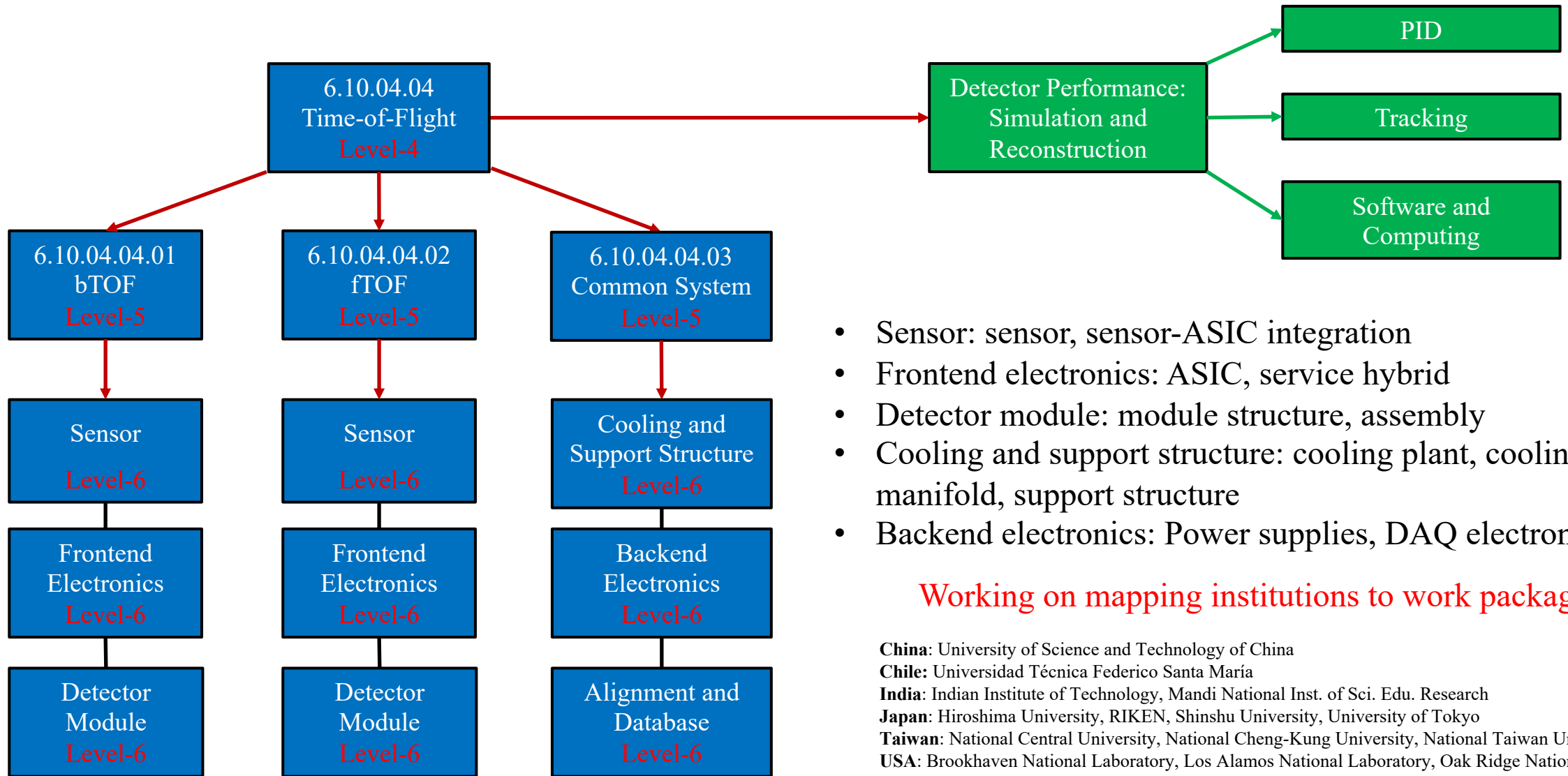
TOF Digitization Model for Background Studies

	# Channel	Threshold ¹	Noise rate per channel ²	Analog Shaping time	Analog Resolution	Analog Total hit resolution	Analog Charge Sharing	Digitizer Time Resolution	Digitizer Time bits	Digitizer ADC bits
BTOF	2.4M	0.5->6 keV	30 Hz	5 ns	34 ps	35 ps	3	35 ps	10	8
FTOF	5.6M	0.5->6 keV	30 Hz	5 ns	20 ps	25 ps	2x2	25 ps	10	8

1: threshold for 300um Silicon sensor as implemented in the ePIC simulation, assuming $S/N=25$, and threshold of $5 \times \text{noise}$

2. [link](#)

Proposed Working Package Structure



- Sensor: sensor, sensor-ASIC integration
- Frontend electronics: ASIC, service hybrid
- Detector module: module structure, assembly
- Cooling and support structure: cooling plant, cooling manifold, support structure
- Backend electronics: Power supplies, DAQ electronics

Working on mapping institutions to work packages

China: University of Science and Technology of China

Chile: Universidad Técnica Federico Santa María

India: Indian Institute of Technology, Mandi National Inst. of Sci. Edu. Research

Japan: Hiroshima University, RIKEN, Shinshu University, University of Tokyo

Taiwan: National Central University, National Cheng-Kung University, National Taiwan University

USA: Brookhaven National Laboratory, Los Alamos National Laboratory, Oak Ridge National Laboratory, Ohio State University, Purdue University, Rice University, University of California - Santa Cruz, University of Illinois at Chicago

Institution	Contact	R&D Interest
Brookhaven National Laboratory	Alessandro/Zhangbu	Sensor prototyping, ASIC testing, Electronics development
Fermi National Accelerator Laboratory	Artur Apresyan	Sensor testing, ASIC prototyping
Los Alamos National Laboratory	Xuan Li	Sensor testing, simulation
Rice University	Wei Li	Sensor testing, Electronics development
Oak Ridge National Laboratory	Oskar Hartbrich	Sensor testing, ASIC testing, Electronics development, Simulation
Ohio State University	Daniel Brandenburg	Electronics testing, Simulation
Purdue University	Andreas Jung	Mechanical structure and cooling system prototyping
University of California, Santa Cruz	Matthew Gignac	Sensor testing, ASIC testing
University of Illinois at Chicago	Zhenyu Ye	Sensor testing, sensor-ASIC integration, ASIC testing, Simulation
Hiroshima University	Kenta Shigaki	Sensor prototyping and testing, Simulation
RIKEN	Yuji Goto	
Shinshu University	Kentaro Kawaide	
University of Tokyo	Taku Gunji	Online data reconstruction
South China Normal University	Shuai Yang	Simulation
Univ of Science and Technology of China	Yanwen Liu	Sensor prototyping, Electronics development, Simulation
Indian Institute of Technology, Mandi	Prabhakar Palni	Sensor testing, Simulation
National Inst. of Sci. Education Research	Ganesh Tambave	Sensor prototyping and testing
National Cheng-Kung University	Yi Yang	Mechanical structure prototyping
National Taiwan University	Rong-Shyang Lu	Sensor prototyping, ASIC testing, Electronics testing

Institution	Working Group and Tasks
Brookhaven National Laboratory	BTOF: sensor, sensor-ASIC integration, module assembly; CS: backend electronics; DP: simulation and reco.
Fermi National Accelerator	
Los Alamos National Laboratory	FTOF: sensor, module assembly; CS: cooling system and support structure; DP: simulation and reco.
Rice University	BTOF/FTOF: Front-end electronics; CS: backend electronics; DP: simulation and reconstruction
Oak Ridge National Laboratory	BTOF/FTOF: sensor, sensor-ASIC integration, frontend electronics, module assembly
Ohio State University	BTOF/FTOF: module assembly; CS: backend electronics, alignment; DP: simulation and reco.
Purdue University	BTOF/FTOF: module structure; CS: cooling system and support structure
Univ. of California, Santa Cruz	BTOF: sensor, sensor-ASIC integration, module assembly
University of Illinois at Chicago	BTOF/FTOF: sensor, sensor-ASIC integration, module assembly; DP: simulation and reconstruction
Hiroshima University	BTOF/FTOF: sensor, module assembly; DP: simulation and reconstruction
RIKEN	BTOF/FTOF: module assembly
Shinshu University	BTOF/FTOF: sensor
University of Tokyo	CS: streaming readout; DP: online reconstruction
South China Normal University	
Univ of Sci. and Tech. of China	
Indian Institute of Tech., Mandi	DP: simulation and reconstruction
National Inst. of Sci. Edu. Res.	
National Central University	DP: simulation
National Cheng-Kung University	BTOF/FTOF: module structure; CS: cooling system and support structure
National Taiwan University	BTOF: sensor-ASIC integration, frontend electronics, module assembly
Univ. Técnica Federico Santa María	FTOF: module assembly; DP: simulation and reconstruction

Schedule and Timeline

