

Detector R&D for an Electron Ion Collider

**16th Advisory Committee Meeting
BNL, January 24-25, 2019**

Thomas Ullrich (BNL/Yale)
January 24, 2019



Electron-Collider Status

- **National Academy of Science Review**
 - ▶ July 24: Webinar and release of report
 - ▶ Conclusion: Strong (glowing) support for EIC science
- **DOE**
 - ▶ Office of NP: “Mission Need” soon
- **EIC UG**
 - ▶ Very fruitful hill visit on December 4, 2018
 - ▶ Successful “Remote Meeting” January 10, 2019
 - ▶ Next User Meeting: July 22-26, 2019 in Paris
 - ▶ Now 849 members, 180 institutions, 30 countries



Electron-Collider Status

- **CERN**

- ▶ Positive meeting at CERN with Eckhard Elsen (CERN Research and Computing Director) and EIC delegation. EE was very aware of the EIC and very encouraging about strong participation of the EIC community in the Particle Physics Strategy update process at CERN/Europe

- **European Particle Physics Strategy Planning**

- ▶ EIC entered 2 documents
 - Synergies between a U.S.-based Electron-Ion Collider and the European research in Particle Physics
 - Electron Ion Collider Accelerator Science and Technology - Designs, R&D and Synergies with European research in Accelerators

R&D Handbook

- Handbook outlines machine parameters, illustrates kinematics of the basic physics processes, examines and defines detector performance requirements, and discusses available (and missing) technologies that will require R&D.
- Living document that, as we hope, gets frequently updated and thus stays relevant for those that work on the realization of an EIC. If you want to contribute please contact me.

Electron-Ion Collider Detector Requirements and R&D Handbook

Version 1.1
January 10, 2019

Authors

Elke Aschenauer, Alexander Kiselev, Richard Petti, Thomas Ullrich, Craig Woody
Brookhaven National Laboratory, NY, US

Tanja Horn,
The Catholic University of America, Washington DC, US

Yulia Furletova,
Jefferson National Laboratory, VA, US

Pawel Nadel-Turonski
Stony Brook University, NY, US

Laura Gonella, Peter Jones
University of Birmingham, UK

Yordanka Ilieva
University of South Carolina, SC, US

Kondo Gnanvo
University of Virginia, VA, US

FY2019 Funding Period

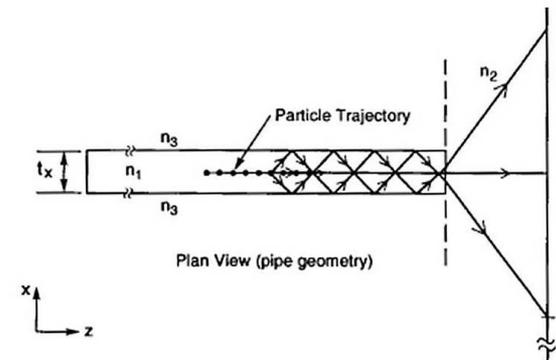
- 10 Projects are funded in FY19
 - ▶ eRD1 - Calorimeter consortium
 - ▶ eRD6 - Tracking consortium
 - ▶ eRD14 - PID consortium
 - ▶ eRD16 - Fwd Silicon tracking
 - ▶ eRD17 - Simulations (BEAGLE)
 - ▶ eRD18 - Central Si tracking
 - ▶ eRD20 - Software consortium
 - ▶ eRD21 - Machine background studies
 - ▶ eRD22 - GEM TRD
 - ▶ eRD23 - Streaming Readout

Green = consortia

New Committee Member

● Blair Ratcliff

- ▶ Research Associate, RHEL, England, 1971 - 1975; Visiting Scientist, CERN, Geneva, 1971 - 1975; Research Associate, SLAC, 1975-1978; Staff Physicist, SLAC, 1978 - 2003; Member of Permanent Staff, SLAC, 2003;
- ▶ Spokesman, LASS Strange Spectroscopy Program E132/135, 1976-1994; SLD/CRID System Manager, SLAC, 1991 - 1995; EB Group Leader, SLAC, 1991 - present; BaBar PID/DIRC System Manager, SLAC 1993 - 2003; BaBar Program Manager, SLAC
- ▶ Father of DIRC (1992) for which he received the “2017 Division of Particles and Fields Instrumentation Award“
- ▶ Committees: LHCC, KEK PAC, many DOE reviews, ...



Will start at next meeting

EIC R&D Advisory Committee

Standing Advisory Committee:

Marcel Demarteau* (Argonne)

Carl Haber (LBNL)

Peter Krizan (Ljubljana)

Ian Shipsey (Purdue)

Rick Van Berg (UPenn)

Jerry Va'vra (SLAC)

Glenn Young (JLab)

Blair Ratcliff (SLAC)

*chair



Please use coffee breaks for informal discussion with committee members. Pls & speakers were invited to join working dinner tonight.

Unfortunately Jerry and Rick could not make it this time. Blair will join us for the next meeting.

Thursday, January 24, 2019**08:00 Committee: Breakfast and Executive Session (Physics Department, bldg. 510, room 2-160)****Physics Department (bldg. 510), Large Seminar Room**

	Title	Speaker (Time)	Slides
08:50	Welcome and Overview	Thomas Ullrich (10)	-
09:00	eRD6: Progress Report - Tracking	Bob Azmoun (40+10)	-
09:50	eRD22: Progress Report - GEM Based TRD	Yulia Furletova (20+10)	-
10:20	Coffee Break		
10:50	eRD16: Progress Report - Fw. Si Tracking	Ernst Sichtermann (20+10)	-
11:20	eRD18: Progress Report - Central Si Tracking	Peter Jones (20+10)	-
11:50	Lunch Break		
13:20	eRD14: Progress Report - PID Consortium	Pawel Nadel-Turonski (40+10)	-
14:10	eRD1: Progress Report - Calorimeter Consortium	C. Woody, T. Horn, O. Tsai (45+10)	-
15:05	Coffee Break		
15:35	eRD17: Progress Report - BeAGLE	Mark Baker (20+10)	-
16:05	eRD23: Progress Report - Streaming Readout	Jan Bernauer (20+10)	-
16:35	eRD20: Progress Report - Software Consortium	Markus Diefenthaler (20+10)	-
17:05	Executive Session (Physics Department, bldg. 510, room 2-160)		
19:00	Dinner and Discussions - Committee & PIs/Speakers (Berkner Hall)		

Friday, January 25, 2019

08:00 Committee: Breakfast and Executive Session (Physics Department, bldg. 510, room 2-160)

Physics Department (bldg. 510), Large Seminar Room

	Title	Speaker	Slides
9:00	eRD21: Progress Report - Background Studies	Charles Hyde (20+10)	-
9:30	Homework Talks	TBD	-
10:30	Committee Executive Session & Working Lunch (Physics Department, bldg. 510, room 2-160)		
TBD	Close-Out (Physics Department, bldg. 510, room 2-160)		

Many Thanks To

- **Rachel Nieves** for travel arrangements and housing for the committee, for all food & beverage arrangements, room bookings, dealing with guest registrations, and for keeping up with us
- The **EIC R&D Committee** for their enthusiasm and hard work to make the program work
- **Liz Mogavero** for dealing with the contracts all year
- **Achim Franz** for A/V support
- **King Tu** for helping with the talks for this meeting
- **You** for the interest and engagement in the projects and their patience

Looking forward to a successful meeting