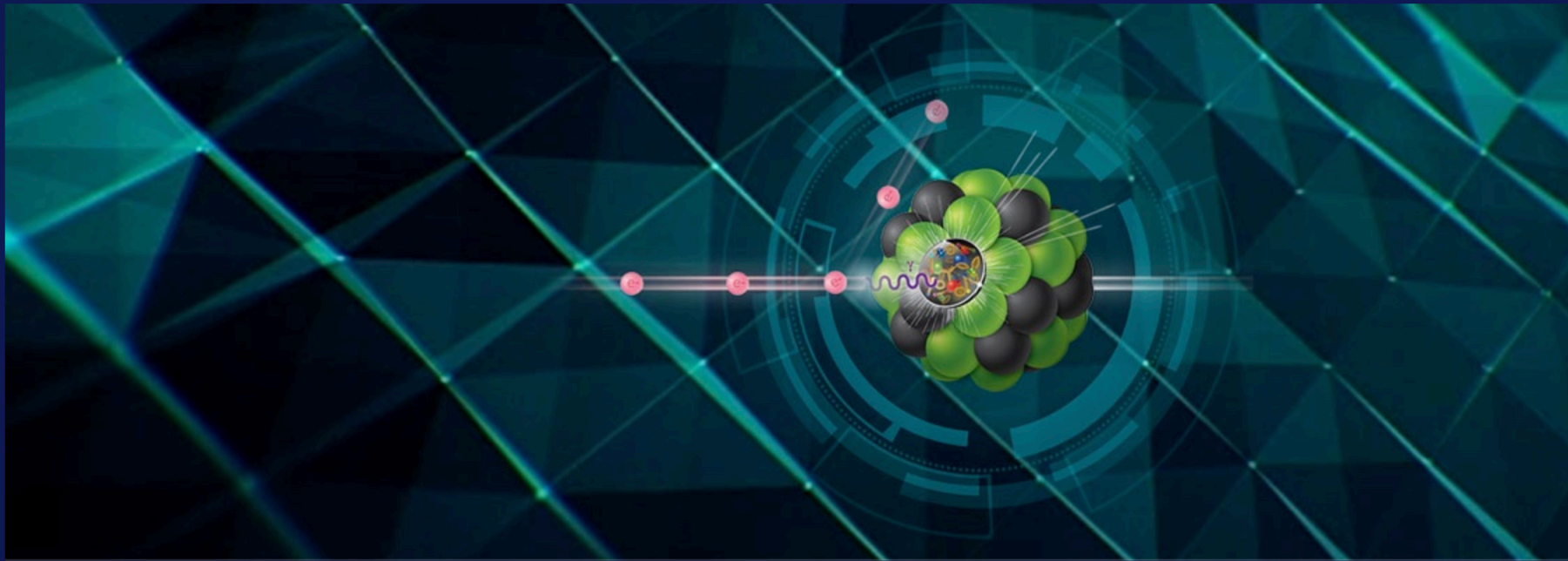


EIC Expression of Interest: An Overview



Received Input to Call for Expressions of Interest for Potential Cooperation on the EIC Experimental Program

Marco Contalbrigo

INFN - Ferrara

This talk is based on the material prepared for the first analysis of the received input to Call for Expression of Interest

And reported to the at 4th Yellow Report meeting at Berkley

The analysis is at a very preliminary stage

Plots were prepared by the analysis team but comments should be taken as strictly personal

Timeline

(non-binding) Expressions of Interest (Eol) to get *guidance on detector scope*

March 2020: Introduce concept and timeline for Call for Expressions of Interest
(introduce notion for Expressions of Interest for contribution to EIC detectors in plenary talks at 1st Yellow Report (remote) meeting at Temple)

April 23: Discussion Call for Eol for **potential cooperation** to EIC Detectors
initial discussion session at Remote EICUGM

May 20: *final discussion at 2nd Yellow Report meeting at Pavia*

May 31: Call for Eol for potential cooperation to EIC Detectors
(issue call after folding in feedback of EICUG)

November 1: Deadline Eol for potential cooperation to EIC

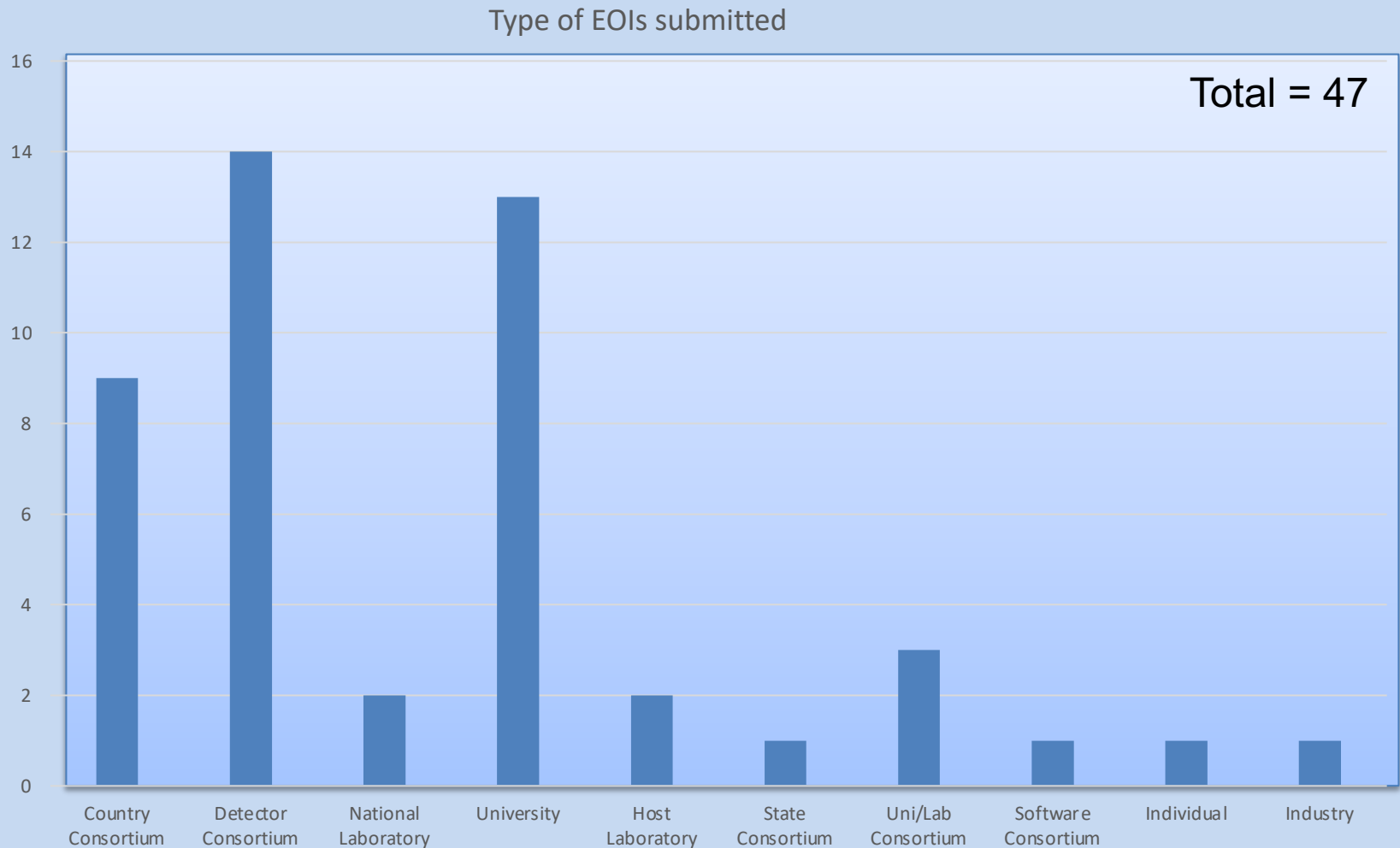
November 21: Status report at 4th (final) Yellow Report meeting at UCB/LBL

Evaluate Eol and inform Call for Detector Proposal(s) ~~February~~ **March 2021**
(complete after assumed January 2021 Yellow Report completion, Eol can give guidance on detector scope)

Assessment

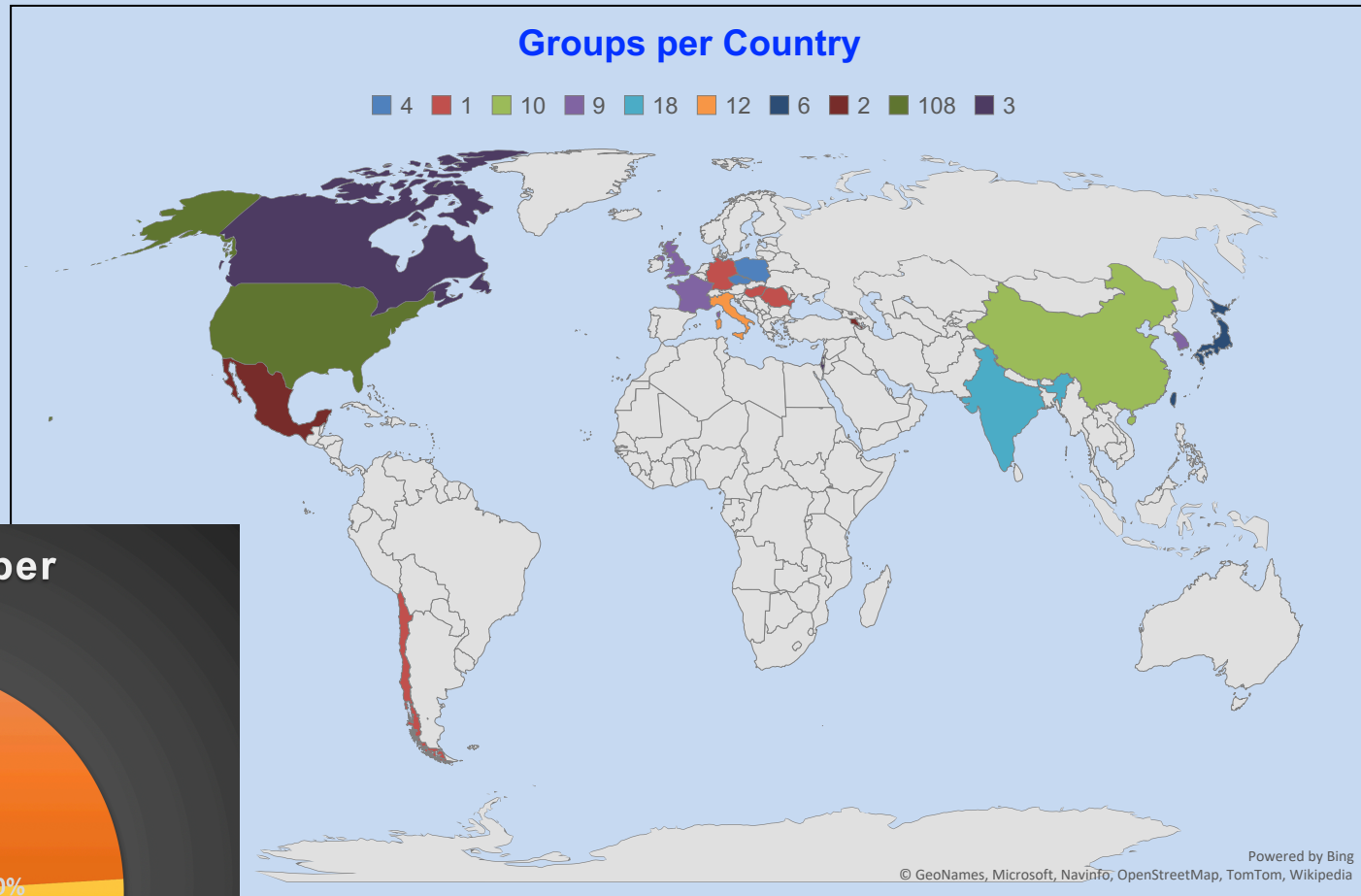
- Asked Detector Advisory Committee for input on “Advice on the process of assessment of the received Expressions of Interest (EOI), ...”
 - “The reference detector and the broad EOI input should allow **matching of groups with detector needs**. The laboratory management and users group representatives are expected to help **resolve duplicate proposals, identify holes and determine where funds are needed to further develop promising technologies**. Given the short timeline to full detector proposals, this process could be challenging and may require careful attention to **governance and transparency**.”
- All Eois available at <https://indico.bnl.gov/event/8552/>
- After deadline of November 1, group of people representing EIC Project and EIC User Group, started an early assessment process.
 - Elke Aschenauer (BNL, EIC Project co-associate director for experimental program)
 - Rolf Ent (JLab, EIC Project co-associate director for experimental program)
 - Christine Aidala (U Michigan, EICUG IB Chair)
 - Marco Contalbrigo (INFN Ferrara, EICUG representative)
 - Rosi Reed (Lehigh U, EICUG representative)
 - Bernd Surrow (Tempe U, EICUG SC Chair)
- Early results shown here, a more detailed analysis to follow.

Typology

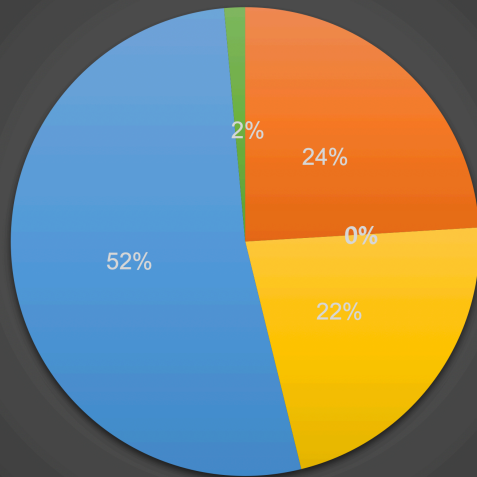


Note: some arbitrariness in categorization, like two national labs (and one international lab) came in together with universities, and one national lab came in as detector consortium, etc.

Geography

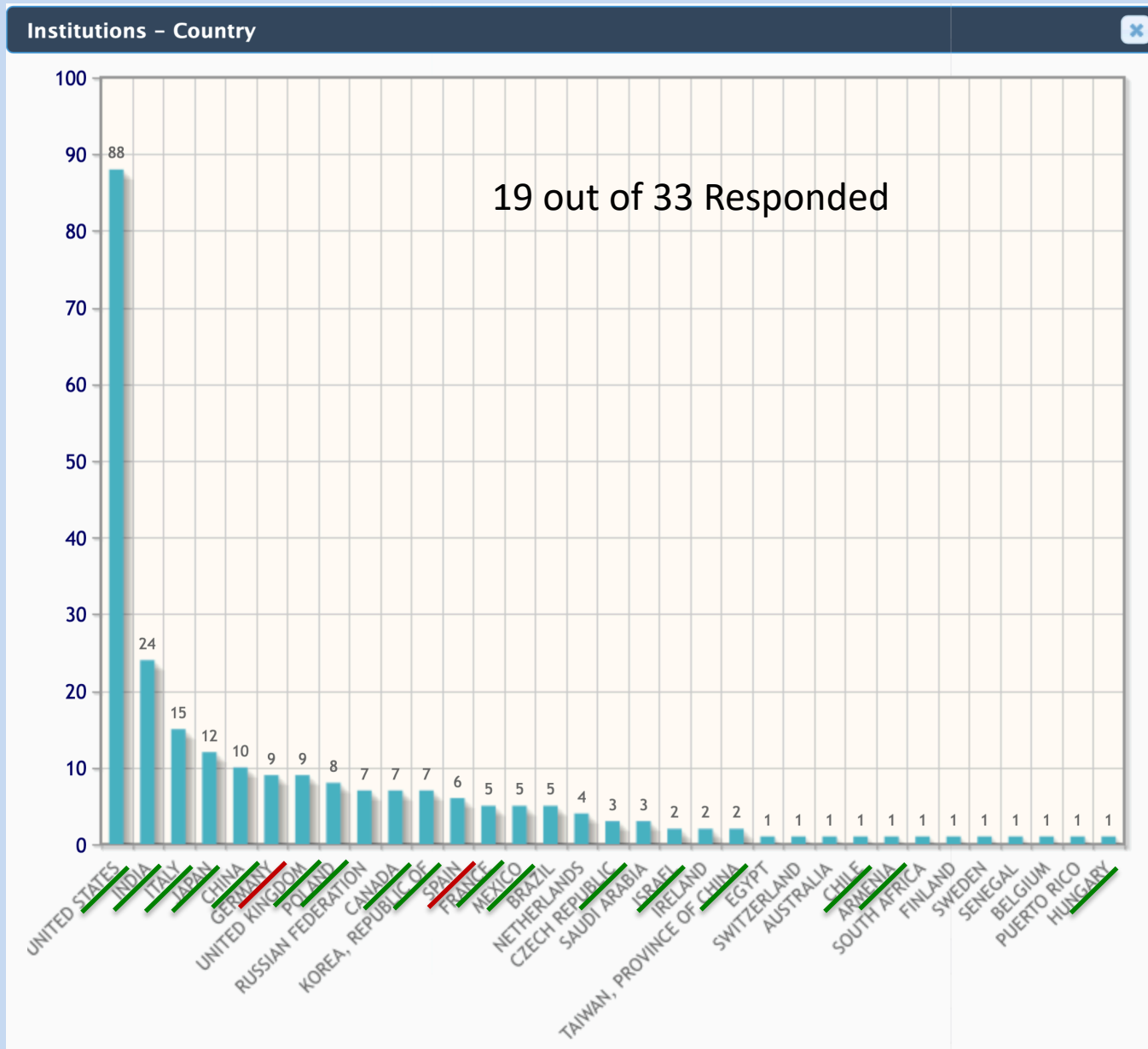


EoI Groups per Continent



Africa Asia Australia
Europe North America South America

EICUG Countries



EIC User Group:

1197 members

245 institutions

33 countries (6 world regions)

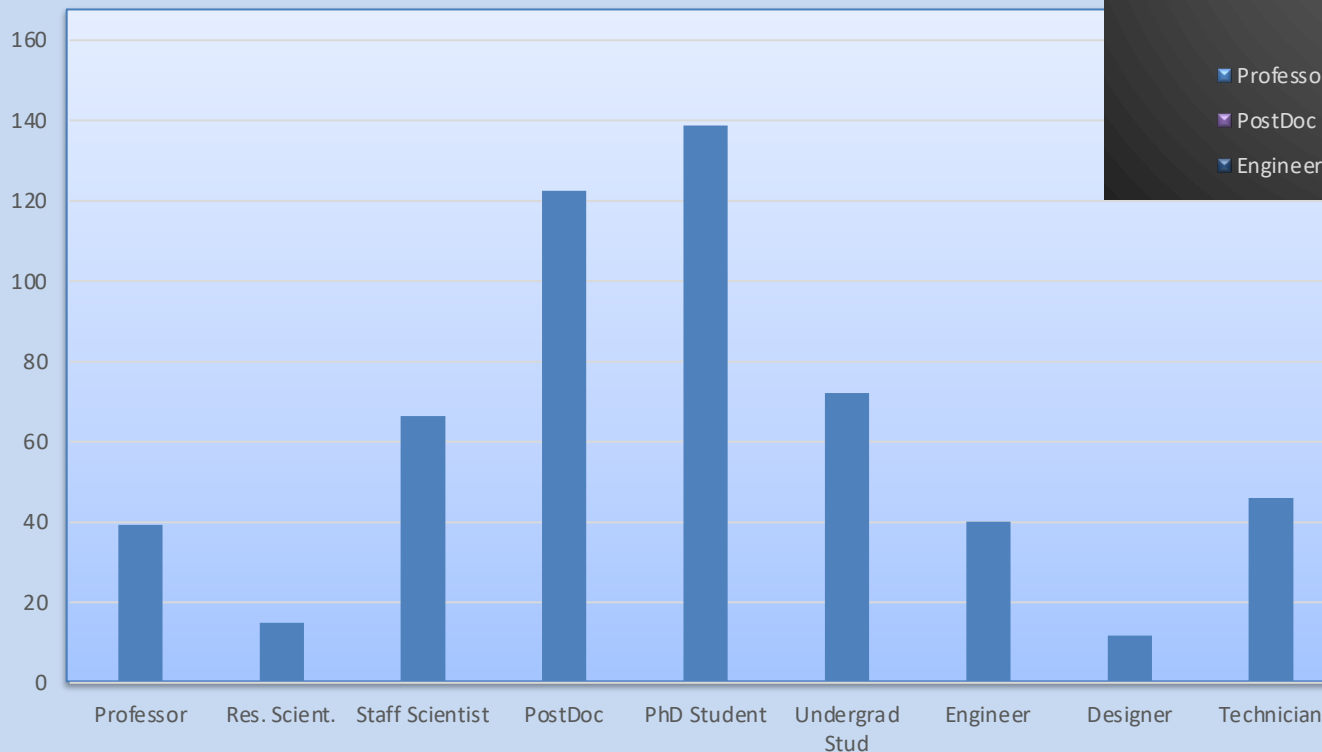
Experiment Scientists: **728**,

Theory Scientists: **299**,

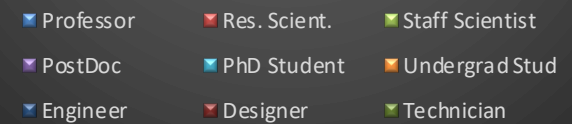
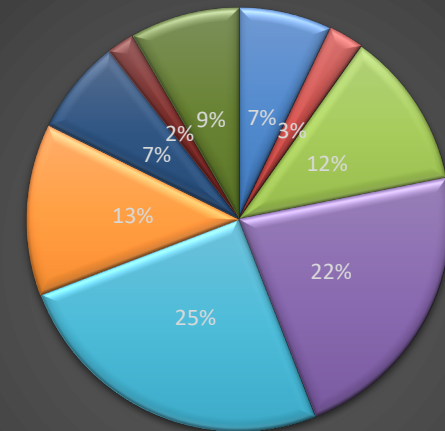
Accelerator Scientists: **160**,

Computer Scientists: **5**, Support: **3**, Other: **2**

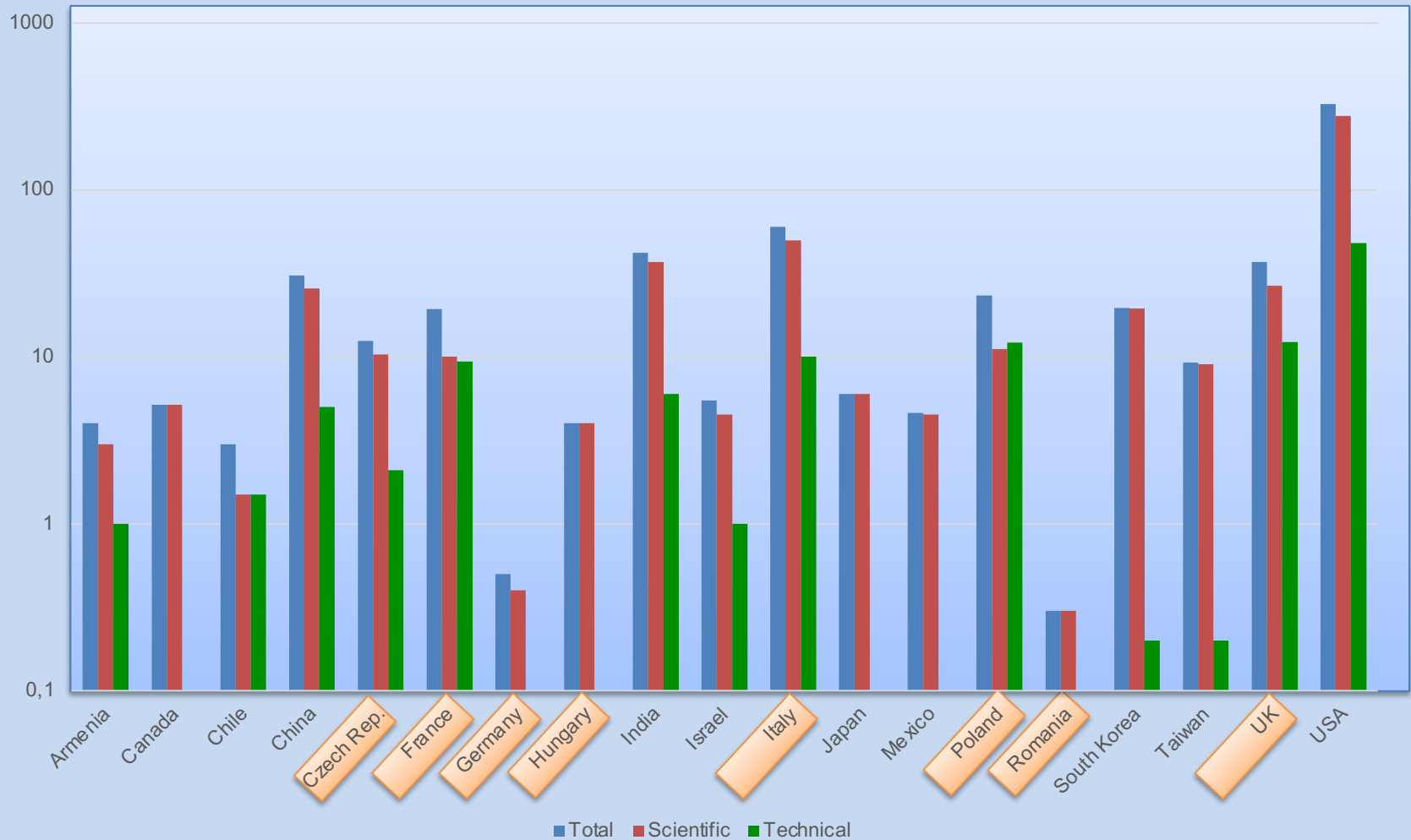
Labor Distribution in FTEs



Labor Distribution in FTEs

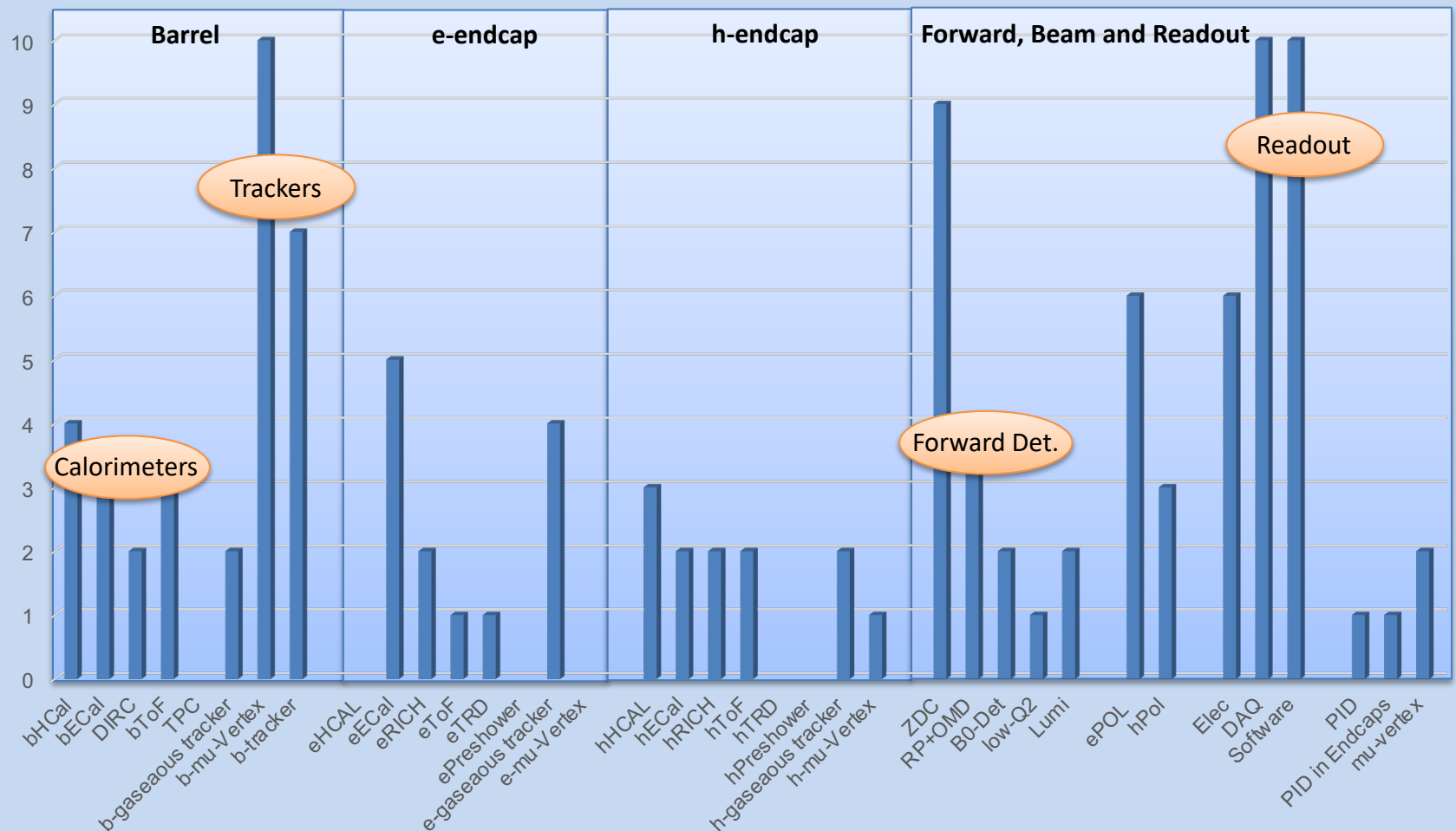


Scientific and Technical labor per Country



Equipment

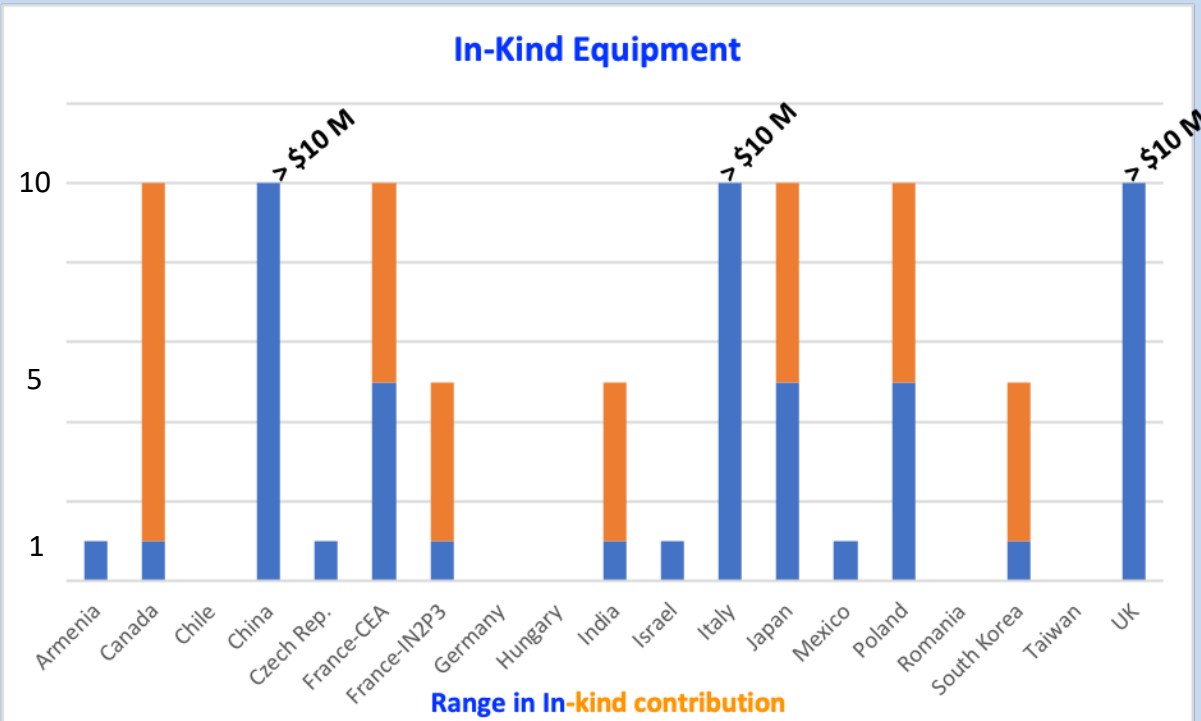
Equipment Interest



Note: some double counting in numbers, e.g., interest expressed by a detector consortium could be echo'ed in Eols of countries, universities, etc. participating in this consortium.

In-Kind Equipment

Ranges have some judgement factor involved



Does not include separate strong interest by academia-industry consortium in Spain to accelerator scope.

Also, for countries like Canada and UK folded in some separate accelerator scope interest in the estimates.

Country	Comments
Italy-INFN	One country that clearly indicates this level of possible contribution to detector in EoI.
France-CEA	Level not clear yet. Based on experience at JLab-12 which they point to. Did commit to PED until CD-2 for magnet already.
UK	Level not clearly stated, but they did submit phase-I R&D proposal to STFC already. Also interest in both detector and accelerator.
China	We are aware this is difficult, but this is the level they indicate they may contribute in-kind.
Canada	Level of in-kind for detector \$1M-5M may be augmented by \$5M-10M accelerator in-kind from TRIUMF.
Japan	Level indicated at EoI as possible request to their agencies.
France – IN2P3	States \$1M in EoI for backward calorimetry, but other topics seem possible.
India	Mostly commits to (lot of) labor for scientific tasks, some small requests possible.
Poland	Level of in-kind contribution that may be possible.
Czech Republic	Do not explicitly indicate in-kind non-labor contribution, some seems likely.
Korea	Do not explicitly indicate in-kind but hint at possibility. Unclear.
Mexico	Mostly labor, small in-kind only
Israel	A \$1M contribution seems possible
Armenia	Mostly labor, small in-kind only

Possible equipment for use of EIC detector:

- sPHENIX/BABAR magnet (with some modifications)
- TPC
- Ex-BABAR DIRC bars
- Accompanying sPHENIX Hadronic Calorimetry
- STAR HCal Calorimetry (FeSc 520 towers)
- E864 lead-scintillating fiber HCal 754 towers, 10cm x10cmx117cm
- Perhaps also some sPHENIX EM Calorimetry
- Few-100 PbWO₄ crystals (2.05 x 2.05 x 20 cm³)
- JLab + BNL ~10k Pb-Glass blocks (3.8 x 3.8 x 45 cm³)
- BNL Pb-Glass blocks (5.8 x 5.8 x 60 cm³)

Examples only!

- ❑ Equipment
 - ❑ Bases seem covered but lean on HCal
 - ❑ Magnet
 - ❑ But secured non-EoI commitment for Engineering and Design help from CEA, Saclay (great!).
- ❑ US
 - ❑ Many universities submitted
 - ❑ We also miss many that are not part of any EoI submission (e.g., many Minority-Serving Institutions, many Heavy-Ion Groups).
- ❑ Countries
 - ❑ Many countries came through (thank you!) despite difficulty times
 - ❑ But we need to work on other countries to be as inclusive as can be
 - Germany? (yes, this one is difficult with LHC and FAIR)
 - Argentina, Brazil, Chile?
 - Russia? (yes, times are difficult)

Elke & Rolf at YR Berkeley Meeting

- There is clearly large interest in EIC science and experimental equipment
 - Both domestically among universities and national labs
 - And international, with many countries represented (Canada, China, Czech, France, India, Italy, Japan, Korea, Poland, UK and institutional Eols of Chile, Hungary, Mexico, Rumania, and group Eols with Armenia, Israel, Saudi Arabia and Taiwan as members)
- At this stage of early-project development, with EIC science still a decade away, impressively many are committed to work on EIC.
- In-kind contributions, from EIC project point of view, clearly suffice to maintain low-risk for a general-purpose EIC detector that is assumed to be 70% project-funded and 30% contributions (in-kind and labor).
 - EIC Project Risk Registry #120: “Failure to Secure in-Kind Detector Components and Labor” – risk assignment “Very Low”.

- This is just the start
- There is a clear need to keep track and follow up
 - to secure in-kind contributions
 - to argue, based on the strong EIC science, for further contributions, to be able to secure a second detector, with crisp arguments on why.
- **Call for Proposal now under definition**
EICUG inputs to Maria Chamizo (BNL) and Bob McKeown (JLab)
at 4th Yellow Report meeting at Berkeley
- **EIC 2nd IP workshop series**
CFNS @ STU: 3 workshops in 2021 to follow up on Yellow Report initiative in preparation of CD2 and CD3
15th December 2020": kickoff meeting

The Science and Instrumentation of the second Interaction Region for the Electron-Ion-Collider (EIC) Preparatory Meeting December 15, 2020

Announcement sent out on December 2 by Abhay Deshpande

The DOE is moving forward with the EIC, to be located at Brookhaven National Laboratory (BNL) with Thomas Jefferson National Accelerator Facility (JLab) as a major partner. The DOE has approved the Critical Decision-0, Approved Mission Need, for the EIC on December 19, 2019 and the preparation of Critical Decision-1 scheduled for 2021 is underway. The **goal of this meeting and the subsequent three workshops that are being scheduled (in spring 2021, summer 2021, and winter 2021) is to discuss the science of the second interaction region at the EIC, its instrumentation, and explore ways of its implementation in order to maximize the scientific impact of the EIC.**

At this preparatory meeting, we will take a fresh look at the evolving landscape of the science underlying the need for the EIC and the need for a complementary approach toward the overall optimization and execution of the science program. For this we have invited speakers to review broad areas of science in exclusive processes, the semi-inclusive and physics with jets, and processes in nuclei as they apply to the energy reach of the EIC. We will also review the interaction regions designs and constraints, with special emphasis of the status of second interaction region, and highlights from the EIC User Group's Yellow Report effort an Expression of Interest initiative.

Information about the details of the meeting agenda, and registration can be found at this link to the web page.
<https://indico.bnl.gov/event/9794/>



Workshop Series on the 2nd Interaction Region at the EIC.

15-16 December 2020

CFNS

US/Eastern timezone

Overview

Timetable

Contribution List

Registration

Participant List

The purpose of this meeting is bring experts in the field to discuss the science of the EIC second interaction region, its instrumentation, and explore ways of its implementation in order to maximize the scientific impact of the EIC.



Starts 15 Dec 2020, 09:00

Ends 16 Dec 2020, 16:00

US/Eastern



CFNS

[https://stonybrook.zoom.us/j/92041088934?](https://stonybrook.zoom.us/j/92041088934?pwd=YktFdUVSbTV1a1NEQWhzZlBON1RFZz09)

[pwd=YktFdUVSbTV1a1NEQWhzZlBON1RFZz09](https://stonybrook.zoom.us/j/92041088934?pwd=YktFdUVSbTV1a1NEQWhzZlBON1RFZz09)



Abhay Deshpande

Barbara Jacak

Bernd Surrow

Franck Sabatié

Haiyan Gao

Latifa Elouadrhiri

Marco Contalbrigo

Richard Milner

Todd Satogata

Volker Burkert



Registration

Registration for this event is currently open.

24

[Register now >](#)

Elke & Rolf's Call:

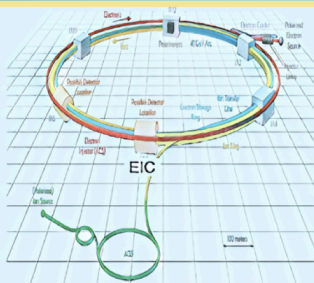
- We is all of us: remain unified and (internationally) argue our EIC case.

BNL-NUMBER
JLAB-NUMBER



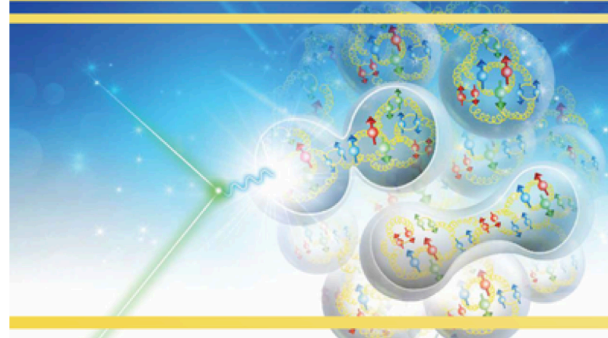
EIC Yellow Report

Volume I: Executive Summary



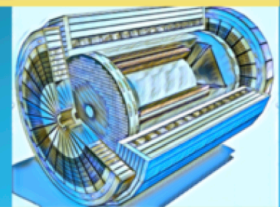
EIC YELLOW REPORT

Volume 1: Physics



EIC Yellow Report

Volume II: Detector



Design: Yulia Furltova