Note: updated logo design

BI-WEEKLY MEETING
22 November 2021

Or Hen, Tanja Horn, John Lajoie

Credit to the entire ECCE Team, EIC Project, and all collaborators

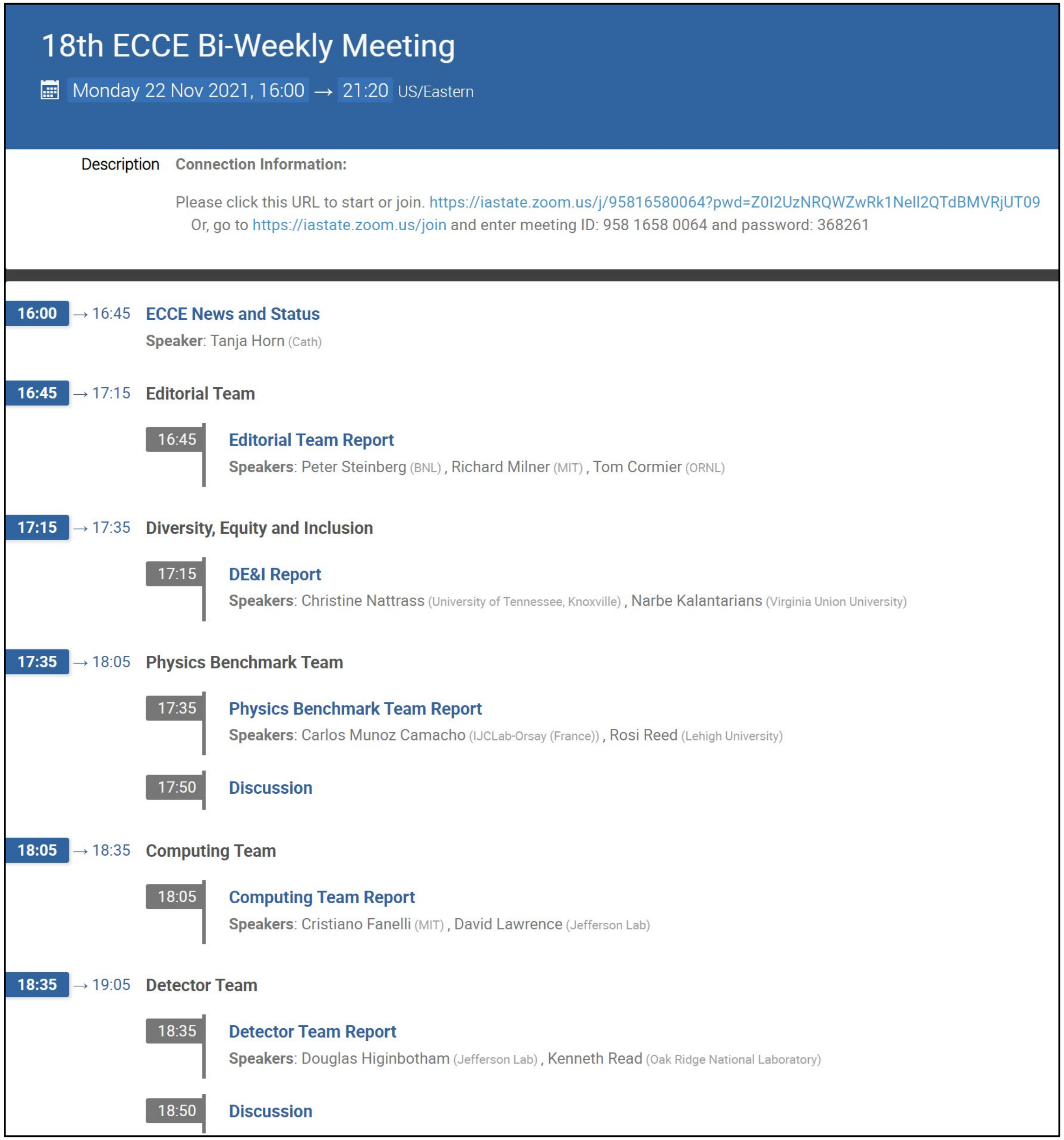
ECCE 22 November Meeting Agenda

8 days to go

- ❑ Introduction and overview
  - ❑ Proposal status
  - ❑ **The End Game**

- ❑ The Teams will present their updates

- ❑ Discussion about the end game: steps and timeline towards the proposal submission and beyond (panel reviews in December and January)



18th ECCE Bi-Weekly Meeting

Monday 22 Nov 2021, 16:00 → 21:20 US/Eastern

Description **Connection Information:**

Please click this URL to start or join. https://iastate.zoom.us/j/95816580064?pwd=Z0I2UzNRQWZwRk1NelI2QTdBMVRjUT09
Or, go to https://iastate.zoom.us/join and enter meeting ID: 958 1658 0064 and password: 368261

16:00 → 16:45 **ECCE News and Status**
Speaker: Tanja Horn (Cath)

16:45 → 17:15 **Editorial Team**

16:45 **Editorial Team Report**
Speakers: Peter Steinberg (BNL) , Richard Milner (MIT) , Tom Cormier (ORNL)

17:15 → 17:35 **Diversity, Equity and Inclusion**

17:15 **DE&I Report**
Speakers: Christine Nattrass (University of Tennessee, Knoxville) , Narbe Kalantarians (Virginia Union University)

17:35 → 18:05 **Physics Benchmark Team**

17:35 **Physics Benchmark Team Report**
Speakers: Carlos Munoz Camacho (IJCLab-Orsay (France)) , Rosi Reed (Lehigh University)

17:50 **Discussion**

18:05 → 18:35 **Computing Team**

18:05 **Computing Team Report**
Speakers: Cristiano Fanelli (MIT) , David Lawrence (Jefferson Lab)

18:35 → 19:05 **Detector Team**

18:35 **Detector Team Report**
Speakers: Douglas Higinbotham (Jefferson Lab) , Kenneth Read (Oak Ridge National Laboratory)

18:50 **Discussion**

ECCE Physics – Updates

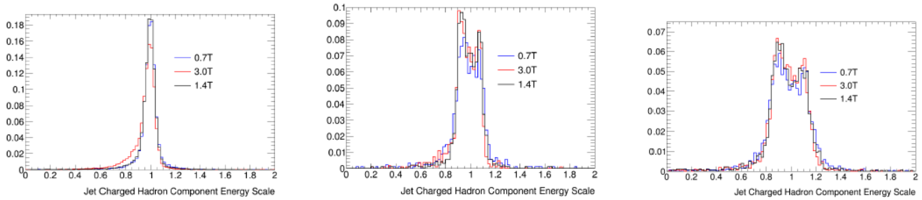


Figure 3.19: Jet Energy Scale (JES) distributions for the charged track component of ECCE Centauro reconstructed track + cluster jets for $\eta_{jet}^{Lab} < 1.25$ (left), $1.25 < \eta_{jet}^{Lab} < 1.4$ (middle) and $\eta_{jet}^{Lab} > 1.4$ (right), with $z_{Jet}^{true} > 0.7$ and $p_{Jet}^{Breit} > 4.0GeV/c$, and for different ECCE central magnetic fields. We used Pythia6 SIDIS events with $Q > 10$ and normalized all distributions to unity to facilitate simple shape comparisons.

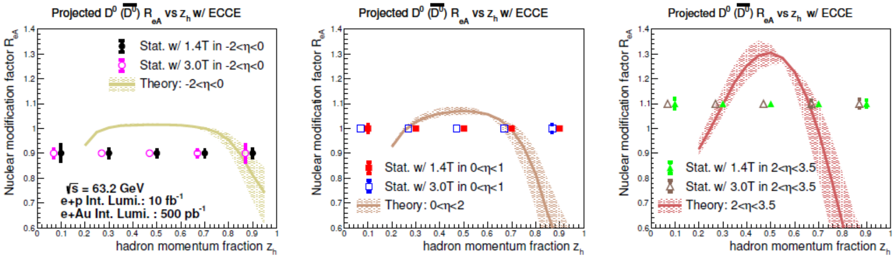


Figure 3.20: Hadron momentum fraction z_h dependent nuclear modification factor R_{eAu} for reconstructed D^0 ($\bar{D}^0$) with the ECCE detector performance in 10+100 GeV $e + p$ and $e + Au$ collisions. The integrated luminosity for $e + p$ ($e + Au$) collisions is 10 fb^{-1} (500 pb^{-1}). The statistical uncertainties of the projected R_{eAu} with the ECCE detector performance using 1.4 T and 3.0 T magnetic fields are shown in closed (open) markers. The theoretical calculations are from [80].

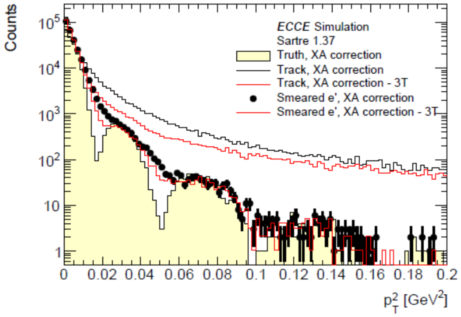


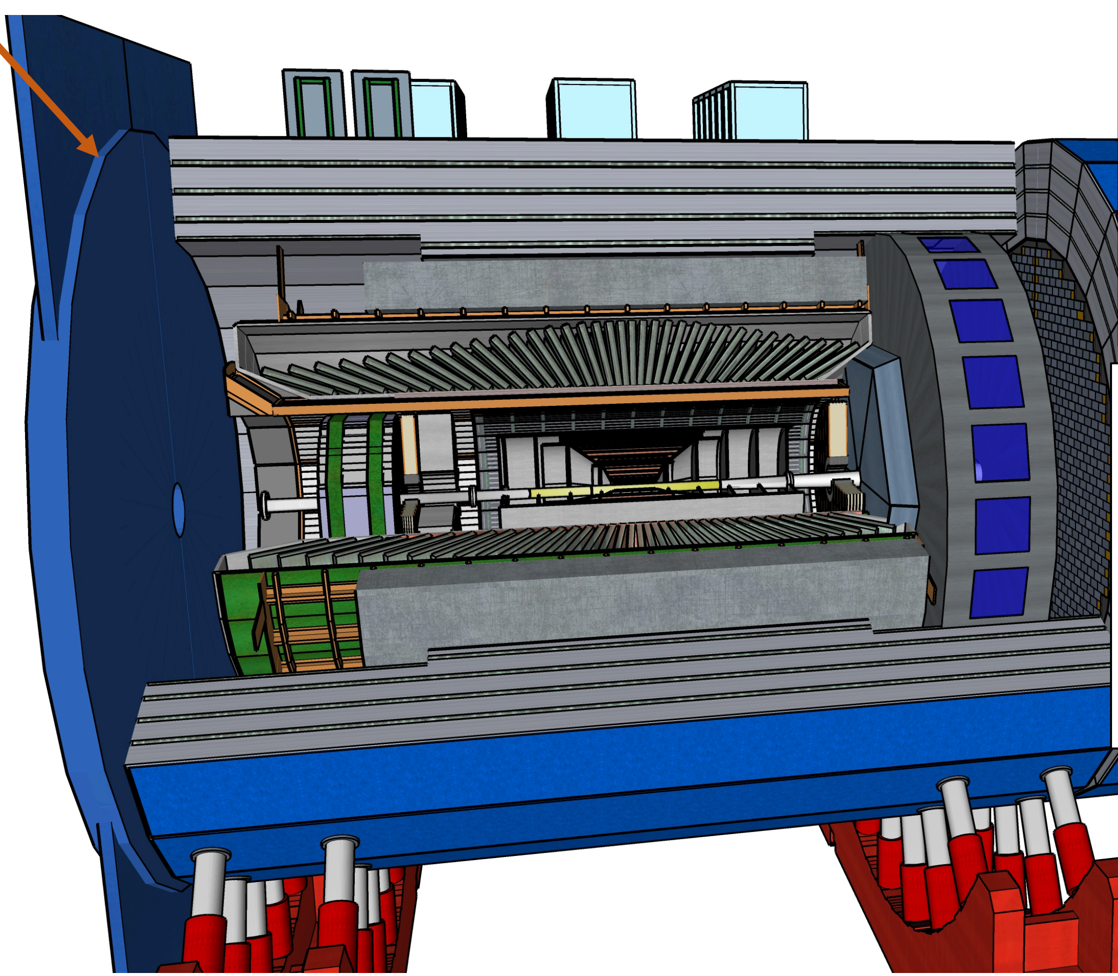
Figure 3.21: Simulation of the t dependence of the elastic diffractive J/ψ production in eA for 1.5T and 3.0 field strengths.

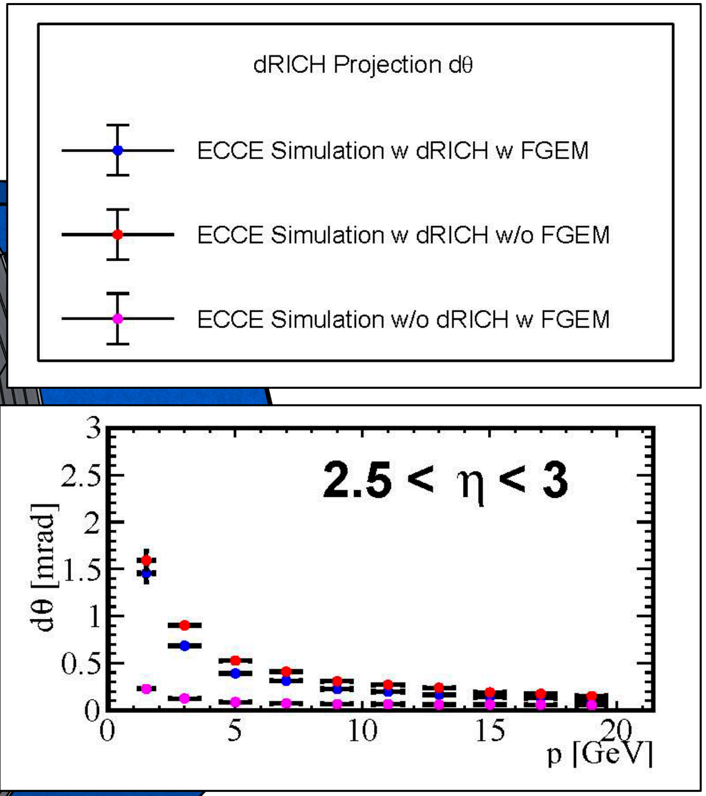
Magnetic Field Strength Impact on Physics Performance

- Jet Energy Scale resolution
- Heavy flavor production
- Coherent diffractive J/Psi production

ECCE Central Detector - Updates

Electron endcap flux return based on sPHENIX – removed hadron calorimeter

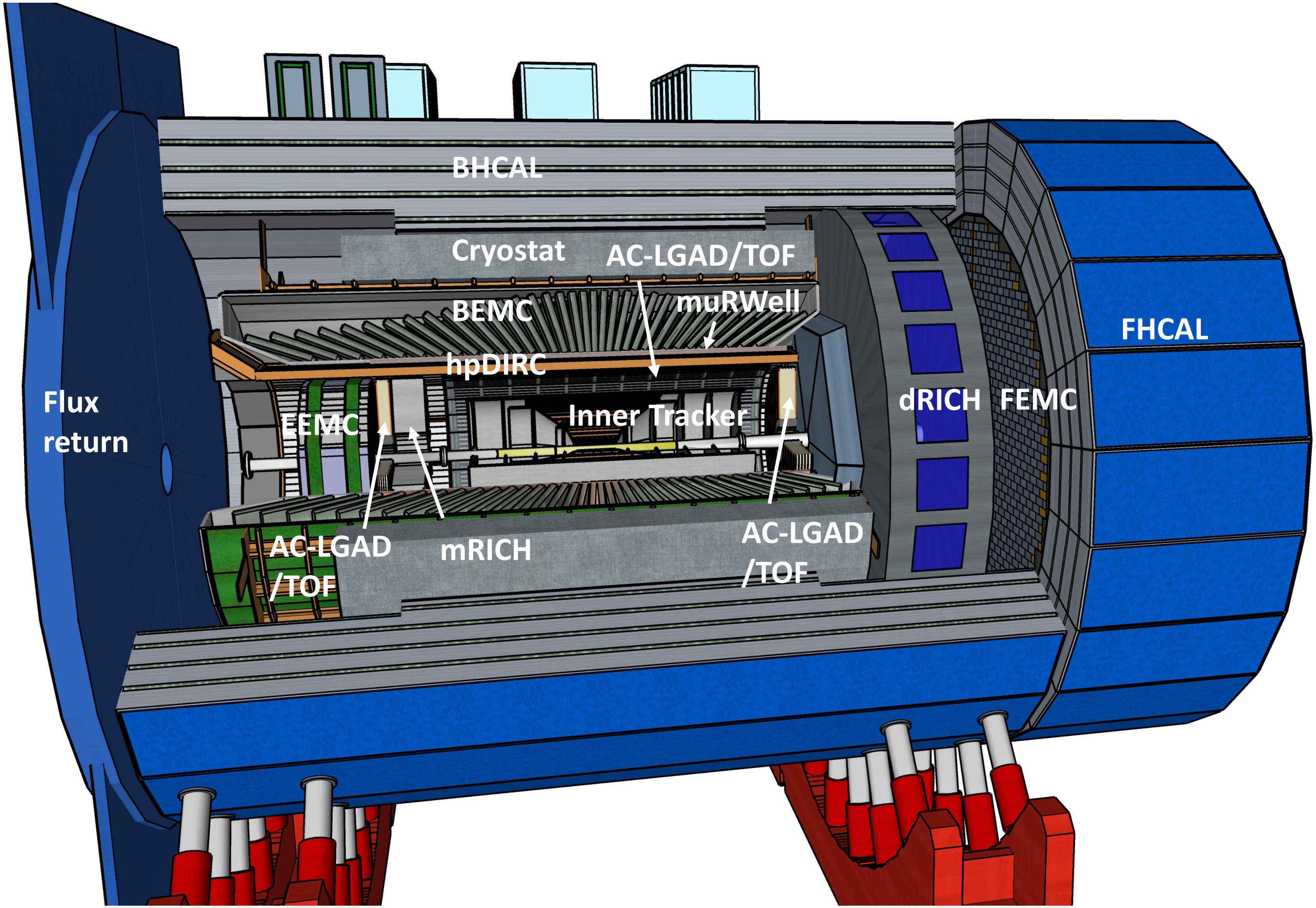




Also removed: forward and backward muRWell – based on tracking studies:

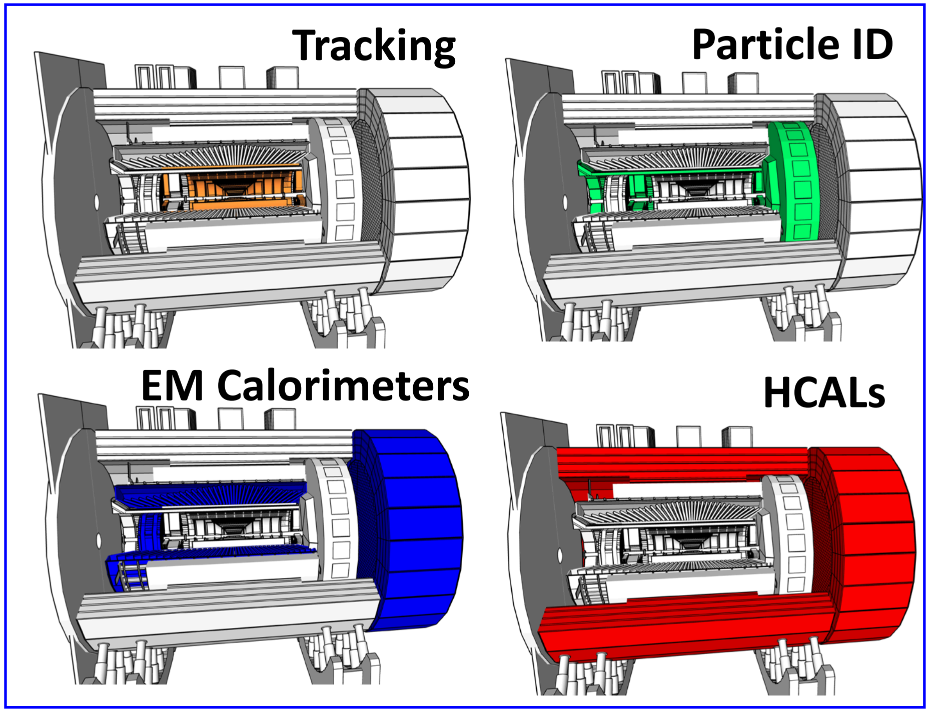
Once one adds the dRICH the impact of FGEM is small

ECCE Central Detector – Final Concept



ECCE Central Detector - Locations

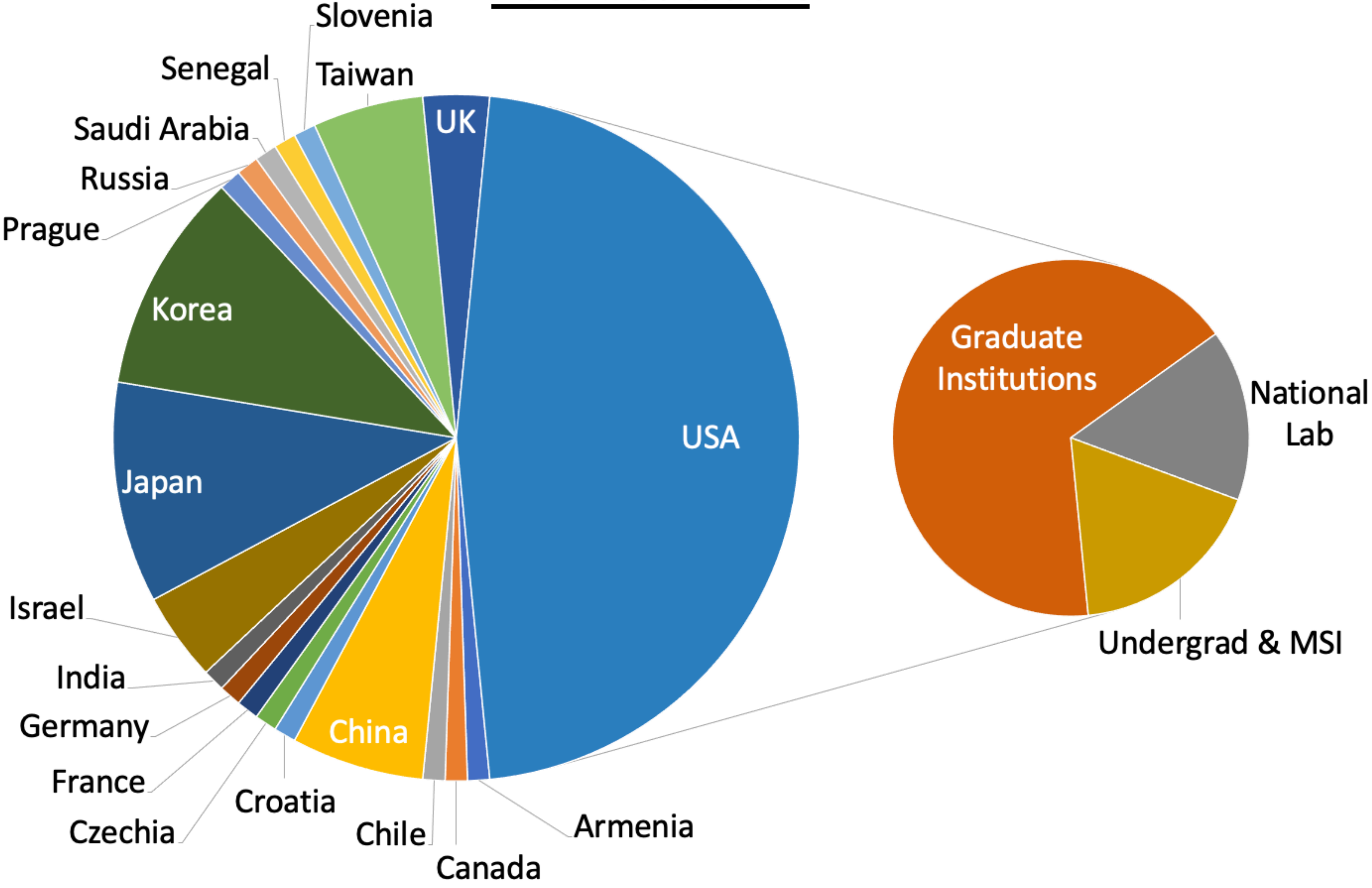
Top level layers	**R-in [cm]**	**R-out [cm]**	**R-Thickness**
Magnet	140	170	30
EMCal support (instrumented)	134	140	6
EMCal Readout (near eta=0)	125.5	134	8.5
EMCal Glass	80	125.5	45.5
EMCal Inner support	79.5	80	0.5
muRwell (plane type)	77	79.5	2.5
Outer Frame	74.5	77	2.5
DIRC (10bar * 12 sector)	71.5	76.6	5.1
Inner Frame	65	71.5	6.5
AC LGAD ToF tracker	63	65	2
(Not used, low mass BdL)	51	60	9
Inner tracker	3	51	48



Top level layers	**z_min [cm]**	**z_max [cm]**	**max radius [cm]**	**dZ [cm]**
Backward field return	-410	-300	267	110
Backward EMCal	-235	-175	64	60
Backward TOF/Tracker	-171	-161	64	10
mRICH	-161	-135	64	26
~~Backward MPGD~~	~~-130~~	~~-120~~	~~64~~	~~10~~
Backward Silicon tracker	-120	-30		90
Vertex tracker	-30	30		60
Forward Silicon tracker	30	150		120
Forward AC LGAD Tof/Tracker	156	180	80	25
dRICH	180	280	195	100
~~Forward MPGD~~	~~281~~	~~291~~	~~180~~	~~10~~
Forward Calorimeters	328	500	267	172

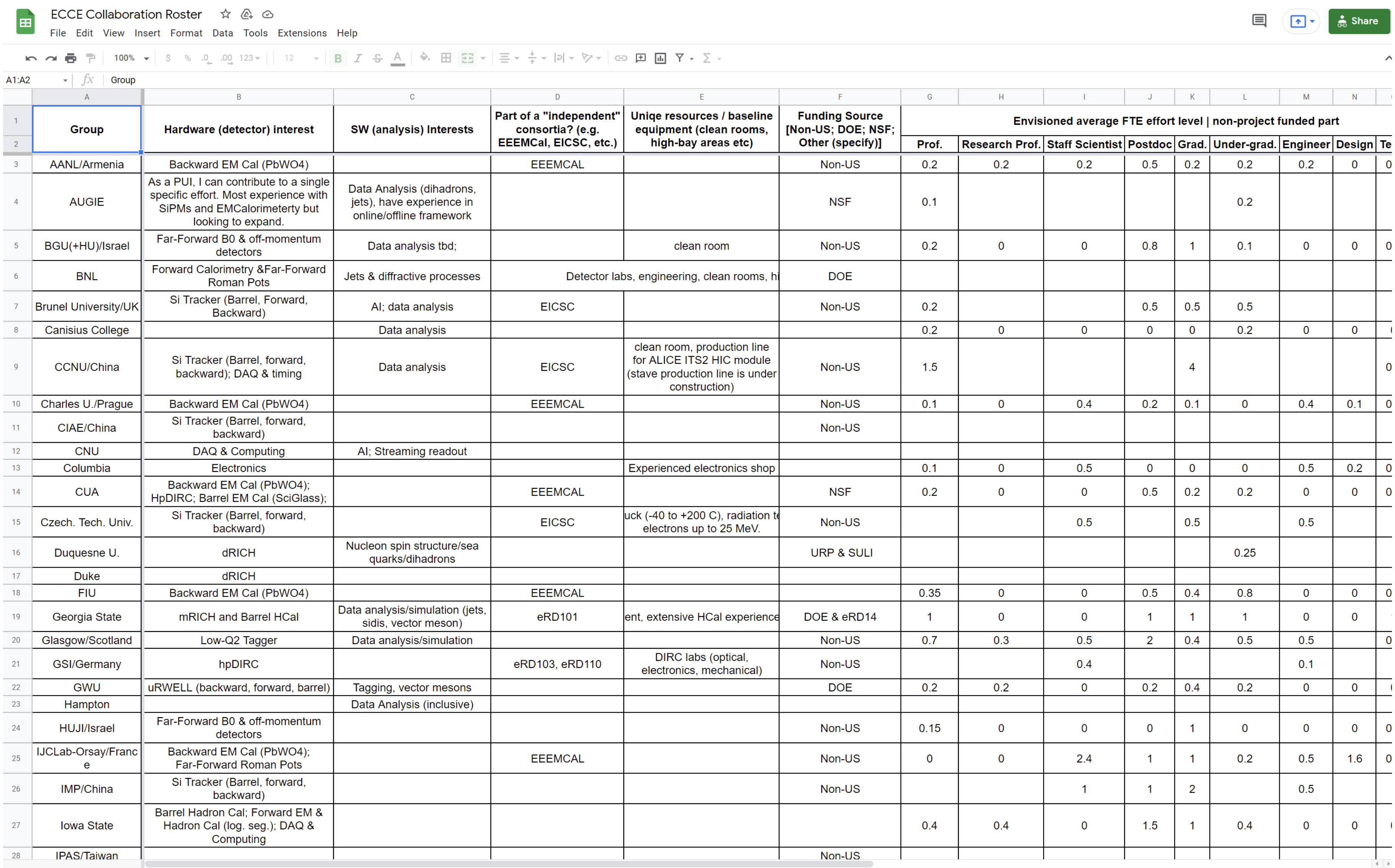
Space vacated by MPGDs may be used for PID detectors or ECAL - future optimizations

ECCE Institutions



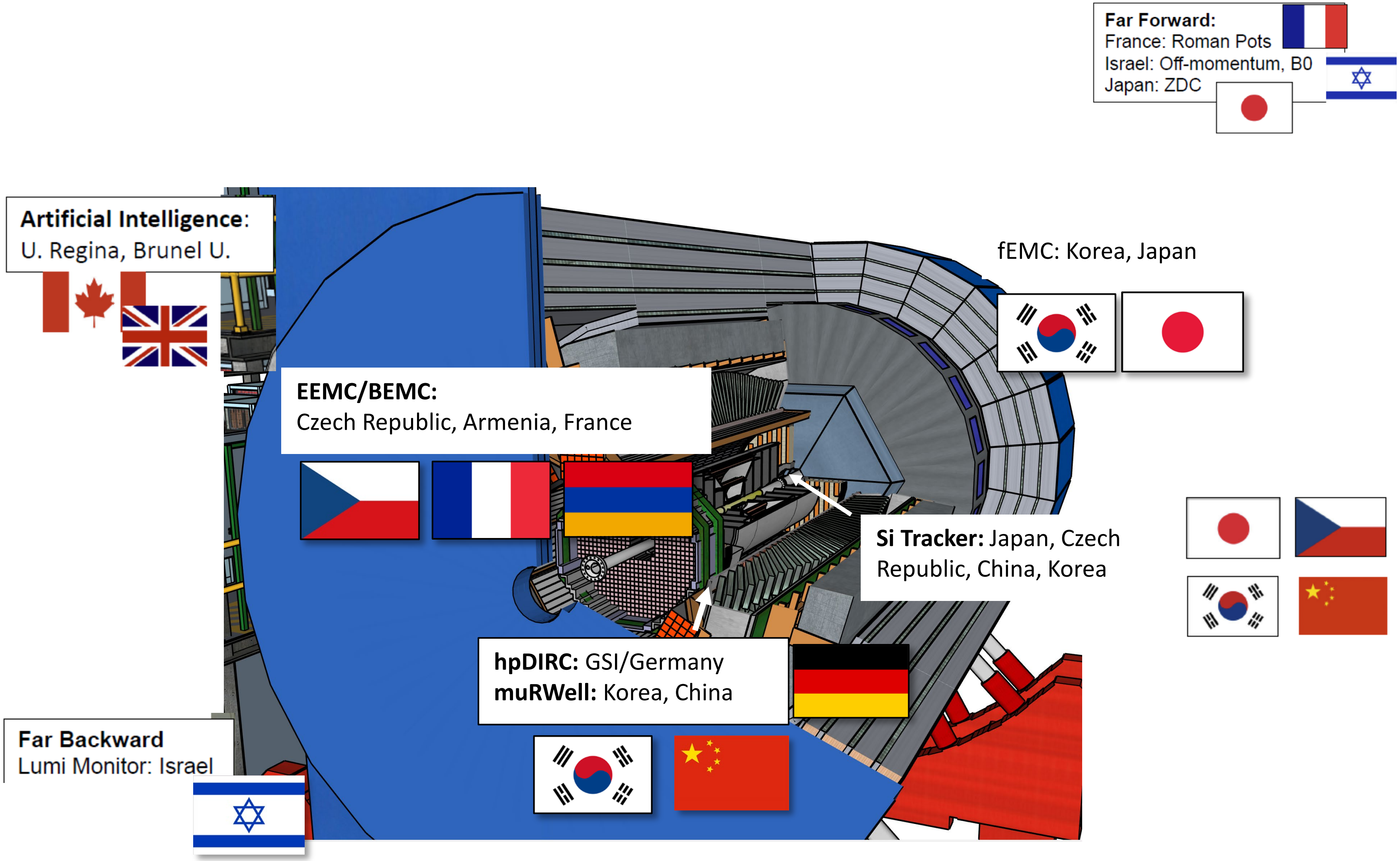
ECCE Collaboration Roster

Please update your interests and unique resources / baseline equipment:
https://docs.google.com/spreadsheets/d/19u06uWBpvkTZYSbL0CNyNl3Vwru4bksVc5ZWC4CiyaA/edit?usp=sharing



Group	Hardware (detector) interest	SW (analysis) Interests	Part of a "independent" consortia? (e.g. EEEMCal, EICSC, etc.)	Uniqe resources / baseline equipment (clean rooms, high-bay areas etc)	Funding Source [Non-US; DOE; NSF; Other (specify)]	Envisioned average FTE effort level | non-project funded part								
						Prof.	Research Prof.	Staff Scientist	Postdoc	Grad.	Under-grad.	Engineer	Design	Te
AANL/Armenia	Backward EM Cal (PbWO4)		EEEMCAL		Non-US	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0	0
AUGIE	As a PUI, I can contribute to a single specific effort. Most experience with SiPMs and EMCalorimeterty but looking to expand.	Data Analysis (dihadrons, jets), have experience in online/offline framework			NSF	0.1					0.2			
BGU(+HU)/Israel	Far-Forward B0 & off-momentum detectors	Data analysis tbd;		clean room	Non-US	0.2	0	0	0.8	1	0.1	0	0	0
BNL	Forward Calorimetry &Far-Forward Roman Pots	Jets & diffractive processes		Detector labs, engineering, clean rooms, hi	DOE									
Brunel University/UK	Si Tracker (Barrel, Forward, Backward)	AI; data analysis	EICSC		Non-US	0.2			0.5	0.5	0.5			
Canisius College		Data analysis				0.2	0	0	0	0	0.2	0	0	
CCNU/China	Si Tracker (Barrel, forward, backward); DAQ & timing	Data analysis	EICSC	clean room, production line for ALICE ITS2 HIC module (stave production line is under construction)	Non-US	1.5				4				0
Charles U./Prague	Backward EM Cal (PbWO4)		EEEMCAL		Non-US	0.1	0	0.4	0.2	0.1	0	0.4	0.1	0
CIAE/China	Si Tracker (Barrel, forward, backward)				Non-US									
CNU	DAQ & Computing	AI; Streaming readout												
Columbia	Electronics			Experienced electronics shop		0.1	0	0.5	0	0	0	0.5	0.2	0
CUA	Backward EM Cal (PbWO4); HpDIRC; Barrel EM Cal (SciGlass);		EEEMCAL		NSF	0.2	0	0	0.5	0.2	0.2	0	0	0
Czech. Tech. Univ.	Si Tracker (Barrel, forward, backward)		EICSC	uck (-40 to +200 C), radiation t electrons up to 25 MeV.	Non-US			0.5		0.5		0.5		
Duquesne U.	dRICH	Nucleon spin structure/sea quarks/dihadrons			URP & SULI						0.25			
Duke	dRICH													
FIU	Backward EM Cal (PbWO4)		EEEMCAL			0.35	0	0	0.5	0.4	0.8	0	0	0
Georgia State	mRICH and Barrel HCal	Data analysis/simulation (jets, sidis, vector meson)	eRD101	ent, extensive HCal experience	DOE & eRD14	1	0	0	1	1	1	0	0	
Glasgow/Scotland	Low-Q2 Tagger	Data analysis/simulation			Non-US	0.7	0.3	0.5	2	0.4	0.5	0.5		0
GSI/Germany	hpDIRC		eRD103, eRD110	DIRC labs (optical, electronics, mechanical)	Non-US			0.4				0.1		
GWU	uRWELL (backward, forward, barrel)	Tagging, vector mesons			DOE	0.2	0.2	0	0.2	0.4	0.2	0	0	
Hampton		Data Analysis (inclusive)												
HUJI/Israel	Far-Forward B0 & off-momentum detectors				Non-US	0.15	0	0	0	1	0	0	0	0
IJCLab-Orsay/France	Backward EM Cal (PbWO4); Far-Forward Roman Pots		EEEMCAL		Non-US	0	0	2.4	1	1	0.2	0.5	1.6	0
IMP/China	Si Tracker (Barrel, forward, backward)				Non-US			1	1	2		0.5		
Iowa State	Barrel Hadron Cal; Forward EM & Hadron Cal (log. seg.); DAQ & Computing					0.4	0.4	0	1.5	1	0.4	0	0	
IPAS/Taiwan					Non-US									

International In-Kind Contributions



Far Forward:
France: Roman Pots
Israel: Off-momentum, B0
Japan: ZDC

Artificial Intelligence:
U. Regina, Brunel U.

fEMC: Korea, Japan

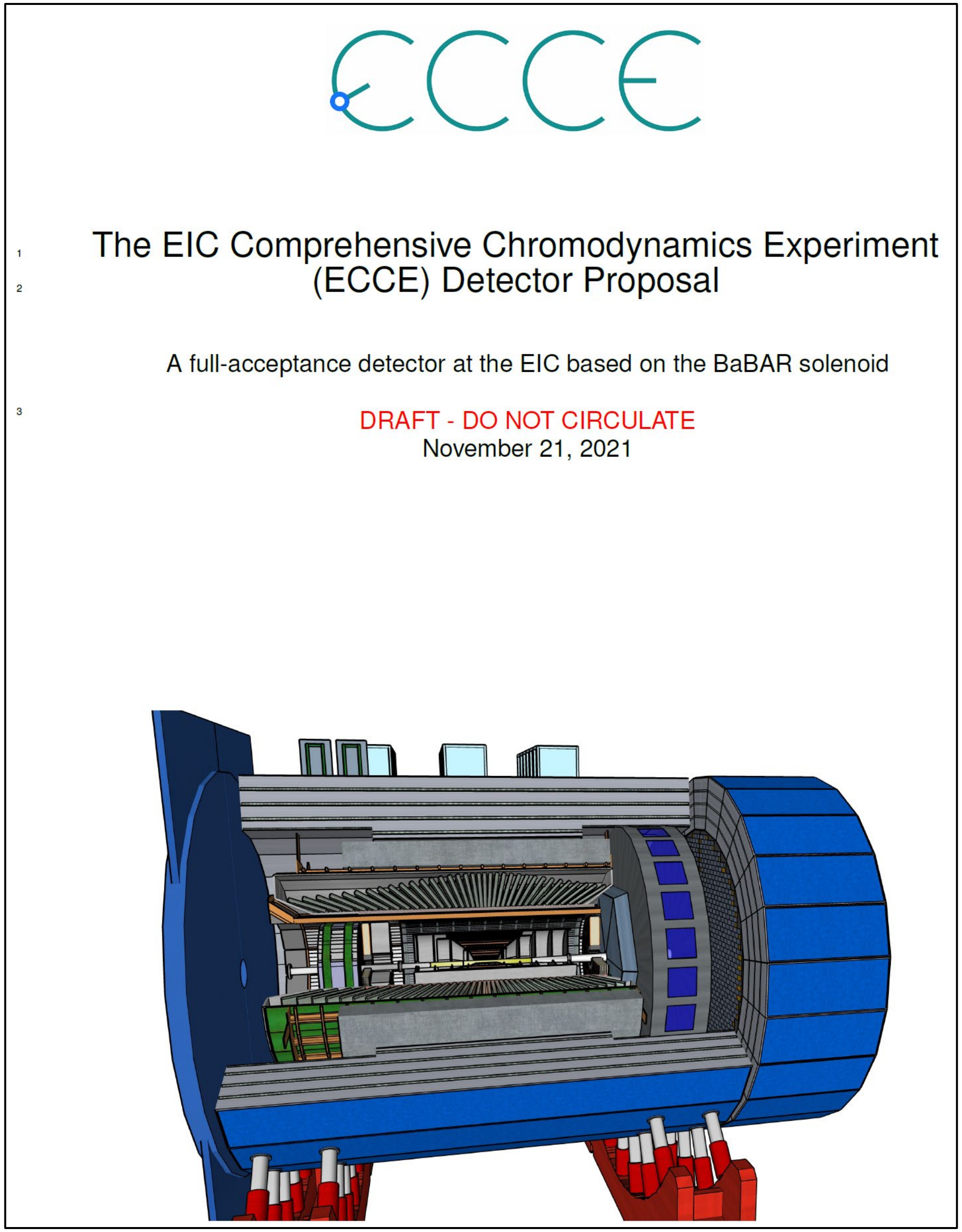
EEMC/BEMC:
Czech Republic, Armenia, France

Si Tracker: Japan, Czech Republic, China, Korea

hpDIRC: GSI/Germany
muRWell: Korea, China

Far Backward
Lumi Monitor: Israel

ECCE Proposal – released for review

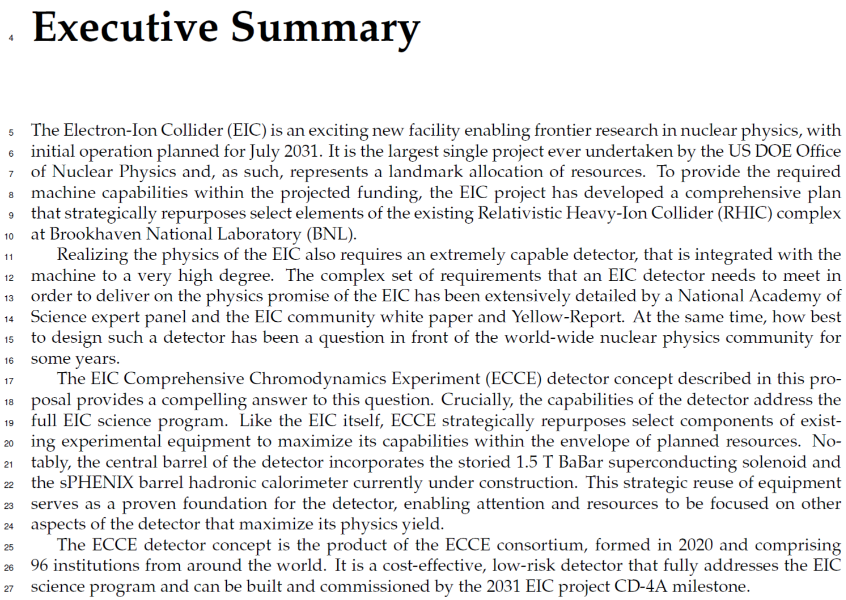


ECCE

The EIC Comprehensive Chromodynamics Experiment
(ECCE) Detector Proposal

A full-acceptance detector at the EIC based on the BaBAR solenoid

DRAFT - DO NOT CIRCULATE
November 21, 2021



Executive Summary

The Electron-Ion Collider (EIC) is an exciting new facility enabling frontier research in nuclear physics, with initial operation planned for July 2031. It is the largest single project ever undertaken by the US DOE Office of Nuclear Physics and, as such, represents a landmark allocation of resources. To provide the required machine capabilities within the projected funding, the EIC project has developed a comprehensive plan that strategically repurposes select elements of the existing Relativistic Heavy-Ion Collider (RHIC) complex at Brookhaven National Laboratory (BNL).

Realizing the physics of the EIC also requires an extremely capable detector, that is integrated with the machine to a very high degree. The complex set of requirements that an EIC detector needs to meet in order to deliver on the physics promise of the EIC has been extensively detailed by a National Academy of Science expert panel and the EIC community white paper and Yellow-Report. At the same time, how best to design such a detector has been a question in front of the world-wide nuclear physics community for some years.

The EIC Comprehensive Chromodynamics Experiment (ECCE) detector concept described in this proposal provides a compelling answer to this question. Crucially, the capabilities of the detector address the full EIC science program. Like the EIC itself, ECCE strategically repurposes select components of existing experimental equipment to maximize its capabilities within the envelope of planned resources. Notably, the central barrel of the detector incorporates the storied 1.5 T BaBar superconducting solenoid and the sPHENIX barrel hadronic calorimeter currently under construction. This strategic reuse of equipment serves as a proven foundation for the detector, enabling attention and resources to be focused on other aspects of the detector that maximize its physics yield.

The ECCE detector concept is the product of the ECCE consortium, formed in 2020 and comprising 96 institutions from around the world. It is a cost-effective, low-risk detector that fully addresses the EIC science program and can be built and commissioned by the 2031 EIC project CD-4A milestone.

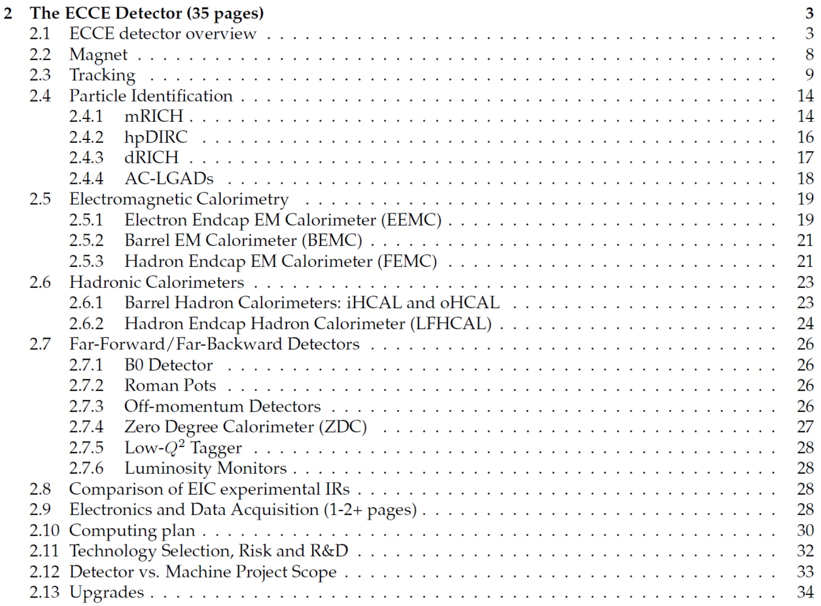
- Draft proposal was released today (11/22)
- Thanks everyone for all your efforts to shape our proposal – we are nearly there!!

ECCE Proposal Submission Global Overview

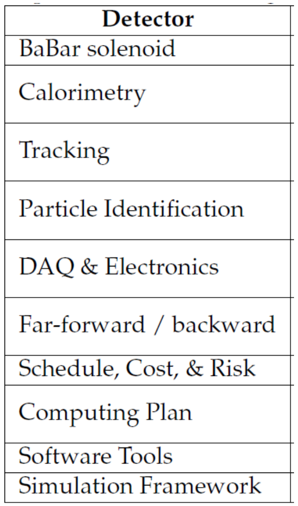
- ❑ Finalize documentation on technical notes by 24 November
    - ➢ Physics Analysis/Detector Tech/Computing Notes
- ❑ Proposal draft was released today (11/22) and been sent to external colleagues
- ❑ Please provide comments by 11/29 to John, Or, Tanja– the sooner the better – they will seek further input from the various conveners
    - ❑ Mechanism for comments:
        - ❑ GitHub
        - ❑ Email to John, Or, Tanja as specified on following pages
- ❑ Final edits once feedback received (< November 29)
- ❑ Proposal submission 1 December

Links to the proposal pdf and all the tech notes (Passwd: ECCEprop): https://www.ecce-eic.org/ecce-internal-notes

ECCE: Detector

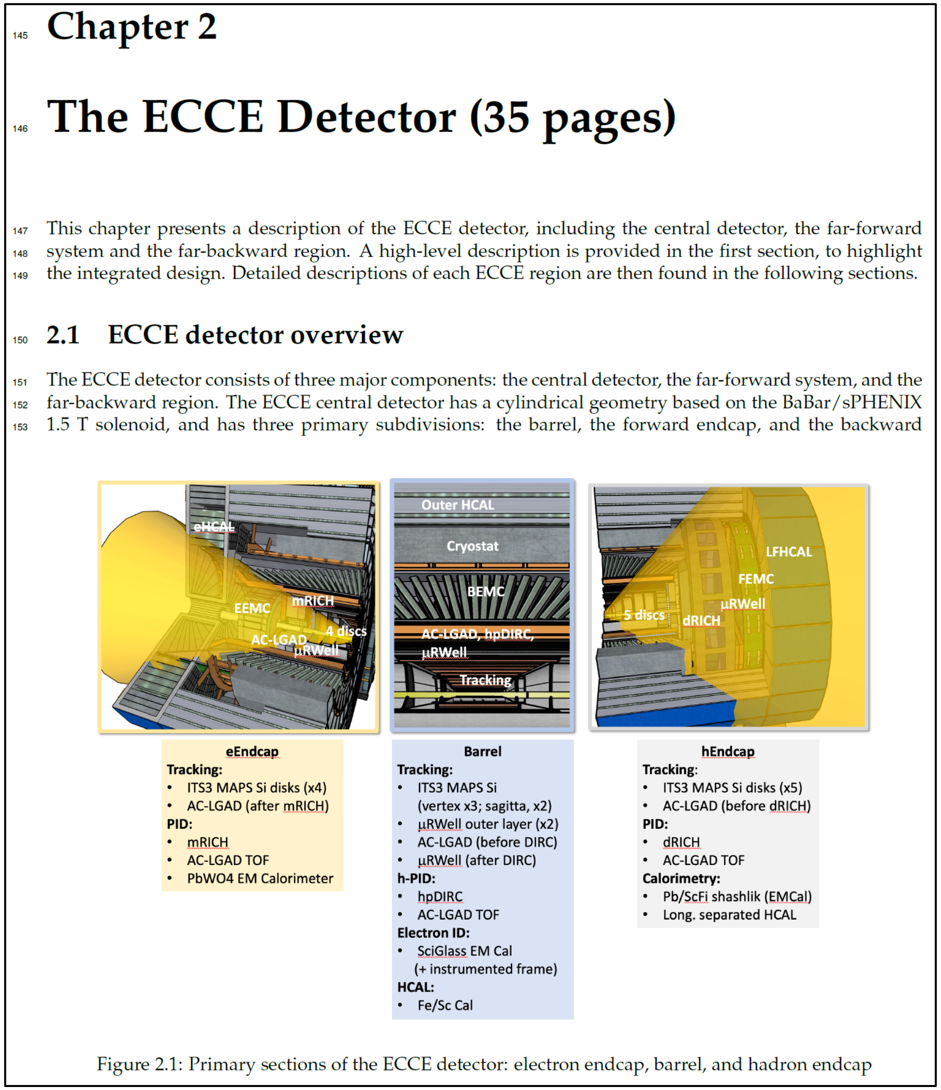


Detector Tech Notes – please finalize any updates by 11/24



Detector
BaBar solenoid
Calorimetry
Tracking
Particle Identification
DAQ & Electronics
Far-forward / backward
Schedule, Cost, & Risk
Computing Plan
Software Tools
Simulation Framework

- Comments on Detector Chapter: please send to Tanja (hornt@cua.edu) with cc to John and Or by 11/29



Chapter 2

The ECCE Detector (35 pages)

This chapter presents a description of the ECCE detector, including the central detector, the far-forward system and the far-backward region. A high-level description is provided in the first section, to highlight the integrated design. Detailed descriptions of each ECCE region are then found in the following sections.

2.1 ECCE detector overview

The ECCE detector consists of three major components: the central detector, the far-forward system, and the far-backward region. The ECCE central detector has a cylindrical geometry based on the BaBar/sPHENIX 1.5 T solenoid, and has three primary subdivisions: the barrel, the forward endcap, and the backward

eEndcap
Tracking:
- ITS3 MAPS Si disks (x4)
- AC-LGAD (after mRICH)

PID:
- mRICH
- AC-LGAD TOF
- PbWO4 EM Calorimeter

Barrel
Tracking:
- ITS3 MAPS Si (vertex x3; sagitta, x2)
- µRWell outer layer (x2)
- AC-LGAD (before DIRC)
- µRWell (after DIRC)

h-PID:
- hpDIRC
- AC-LGAD TOF

Electron ID:
- SciGlass EM Cal (+ instrumented frame)

HCAL:
- Fe/Sc Cal

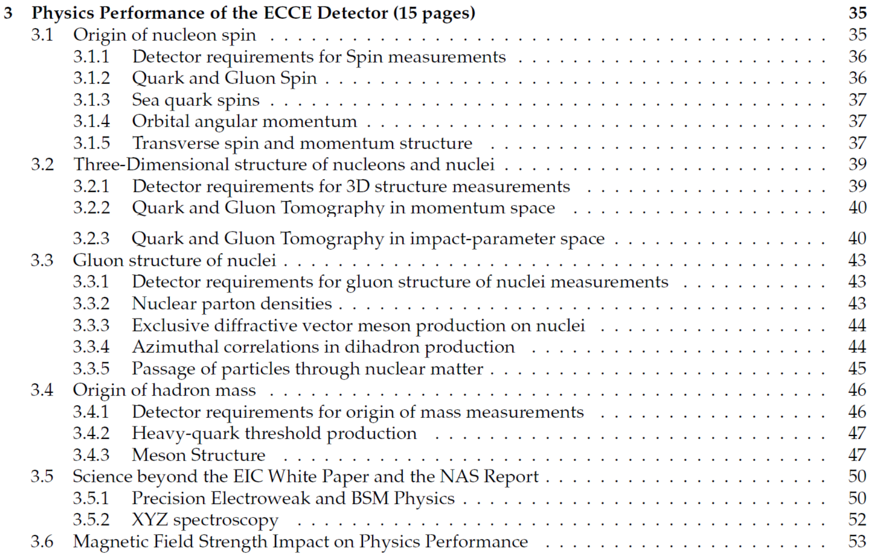
hEndcap
Tracking:
- ITS3 MAPS Si disks (x5)
- AC-LGAD (before dRICH)

PID:
- dRICH
- AC-LGAD TOF

Calorimetry:
- Pb/ScFi shashlik (EMCal)
- Long. separated HCAL

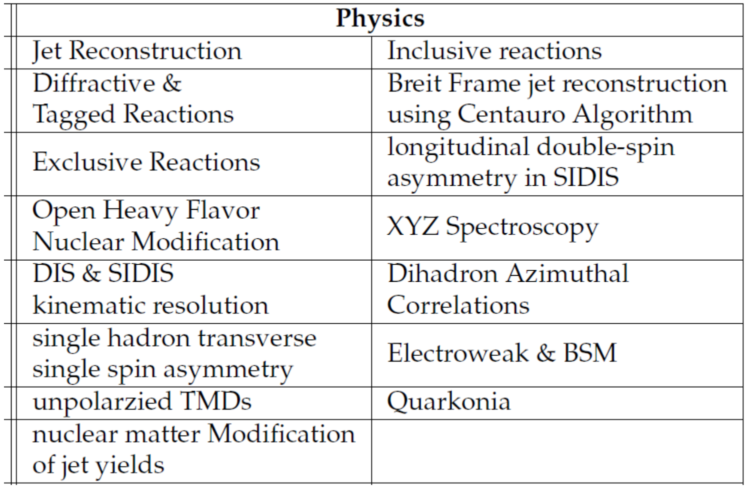
Figure 2.1: Primary sections of the ECCE detector: electron endcap, barrel, and hadron endcap

ECCE: Physics Performance

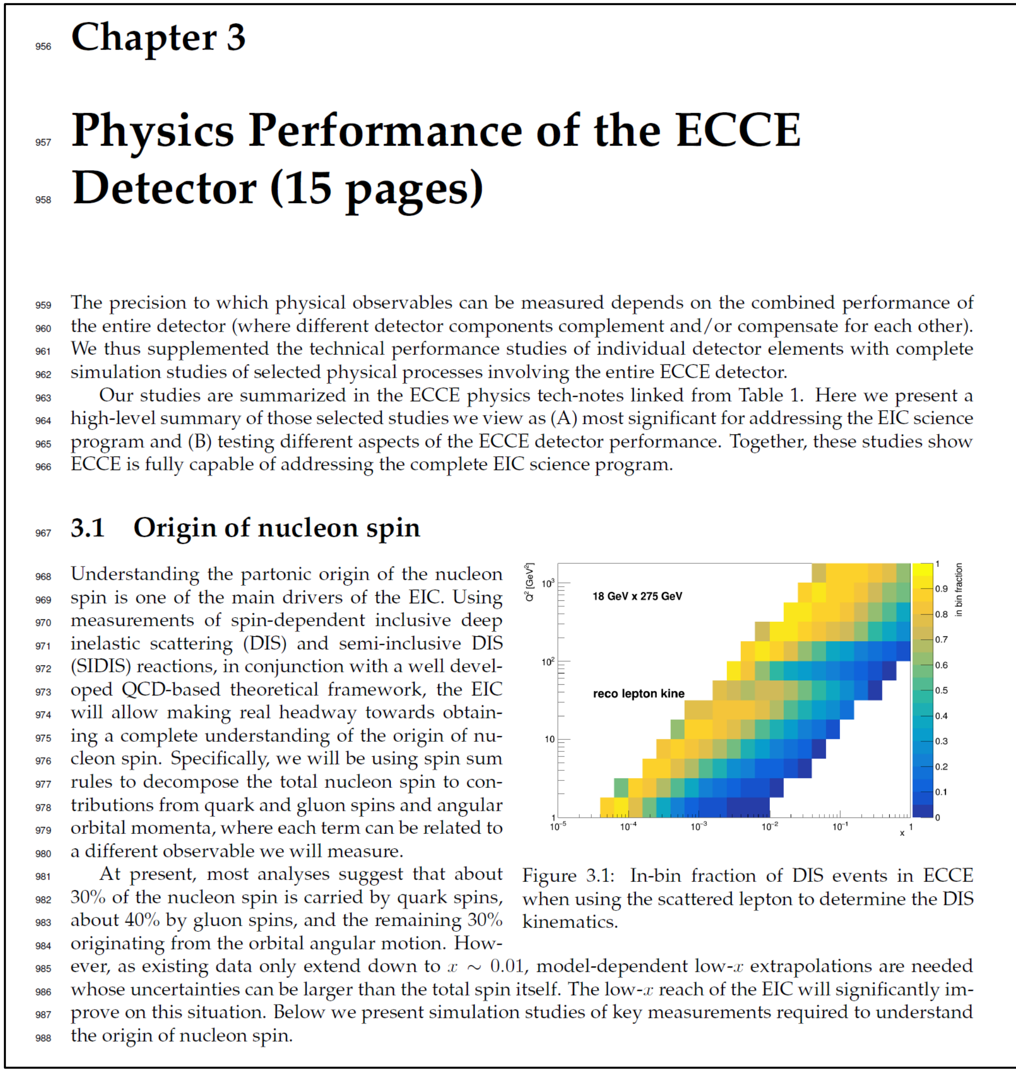


- Comments on Physics Chapter: please send to Or (hen@mit.edu) with cc to John and Tanja by 11/29

Physics Analysis Notes – please finalize any updates by 11/24



Physics	
Jet Reconstruction	Inclusive reactions
Diffractive & Tagged Reactions	Breit Frame jet reconstruction using Centauro Algorithm
Exclusive Reactions	longitudinal double-spin asymmetry in SIDIS
Open Heavy Flavor Nuclear Modification	XYZ Spectroscopy
DIS & SIDIS kinematic resolution	Dihadron Azimuthal Correlations
single hadron transverse single spin asymmetry	Electroweak & BSM
unpolarzied TMDs	Quarkonia
nuclear matter Modification of jet yields	



Chapter 3

Physics Performance of the ECCE Detector (15 pages)

The precision to which physical observables can be measured depends on the combined performance of the entire detector (where different detector components complement and/or compensate for each other). We thus supplemented the technical performance studies of individual detector elements with complete simulation studies of selected physical processes involving the entire ECCE detector.

Our studies are summarized in the ECCE physics tech-notes linked from Table 1. Here we present a high-level summary of those selected studies we view as (A) most significant for addressing the EIC science program and (B) testing different aspects of the ECCE detector performance. Together, these studies show ECCE is fully capable of addressing the complete EIC science program.

3.1 Origin of nucleon spin

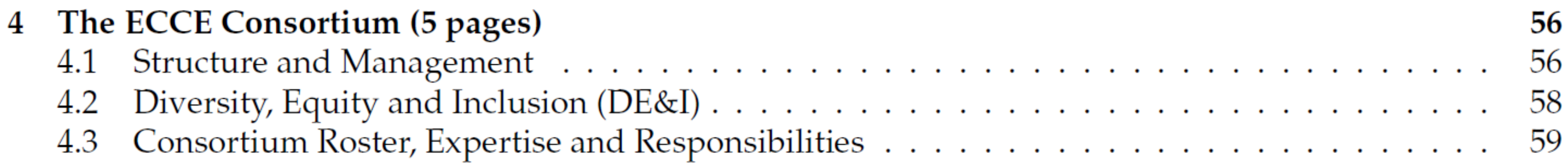
Understanding the partonic origin of the nucleon spin is one of the main drivers of the EIC. Using measurements of spin-dependent inclusive deep inelastic scattering (DIS) and semi-inclusive DIS (SIDIS) reactions, in conjunction with a well developed QCD-based theoretical framework, the EIC will allow making real headway towards obtaining a complete understanding of the origin of nucleon spin. Specifically, we will be using spin sum rules to decompose the total nucleon spin to contributions from quark and gluon spins and angular orbital momenta, where each term can be related to a different observable we will measure.

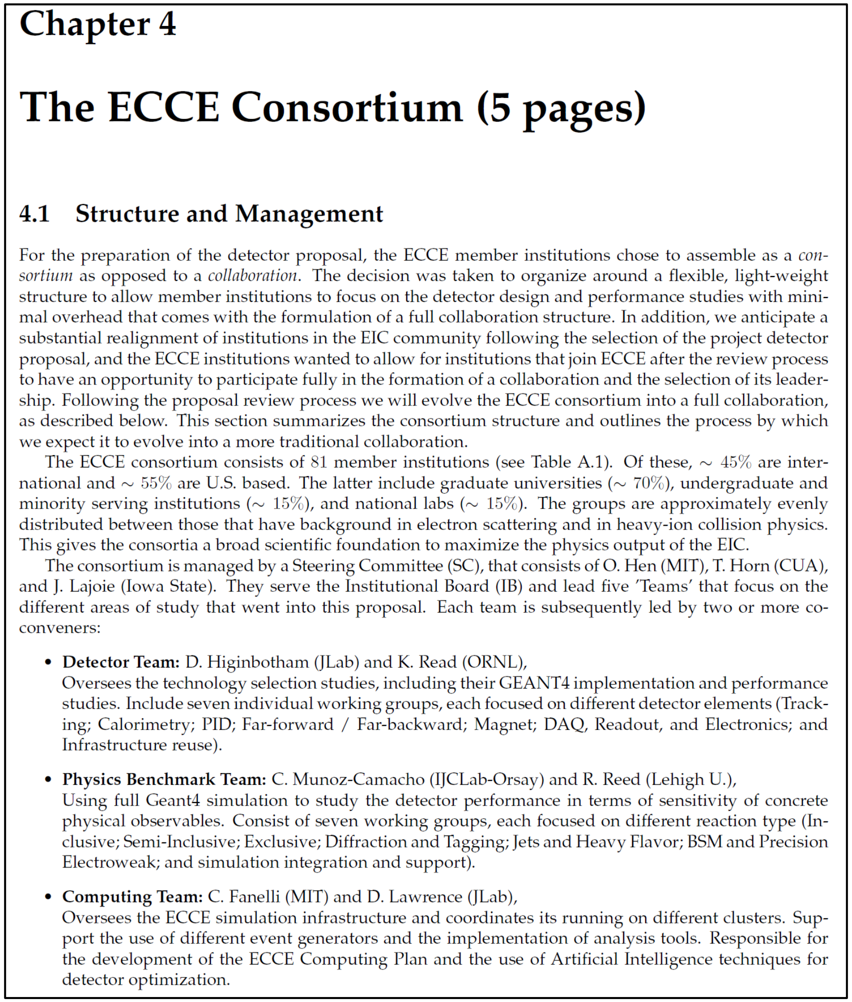
Figure 3.1: In-bin fraction of DIS events in ECCE when using the scattered lepton to determine the DIS kinematics.

At present, most analyses suggest that about 30% of the nucleon spin is carried by quark spins, about 40% by gluon spins, and the remaining 30% originating from the orbital angular motion. However, as existing data only extend down to $x \sim 0.01$, model-dependent low-x extrapolations are needed whose uncertainties can be larger than the total spin itself. The low-x reach of the EIC will significantly improve on this situation. Below we present simulation studies of key measurements required to understand the origin of nucleon spin.

ECCE: Consortium

- ☐ Comments: please send to Or (hen@mit.edu) with cc to John and Tanja by 11/29





Chapter 4

The ECCE Consortium (5 pages)

4.1 Structure and Management

For the preparation of the detector proposal, the ECCE member institutions chose to assemble as a *consortium* as opposed to a *collaboration*. The decision was taken to organize around a flexible, light-weight structure to allow member institutions to focus on the detector design and performance studies with minimal overhead that comes with the formulation of a full collaboration structure. In addition, we anticipate a substantial realignment of institutions in the EIC community following the selection of the project detector proposal, and the ECCE institutions wanted to allow for institutions that join ECCE after the review process to have an opportunity to participate fully in the formation of a collaboration and the selection of its leadership. Following the proposal review process we will evolve the ECCE consortium into a full collaboration, as described below. This section summarizes the consortium structure and outlines the process by which we expect it to evolve into a more traditional collaboration.

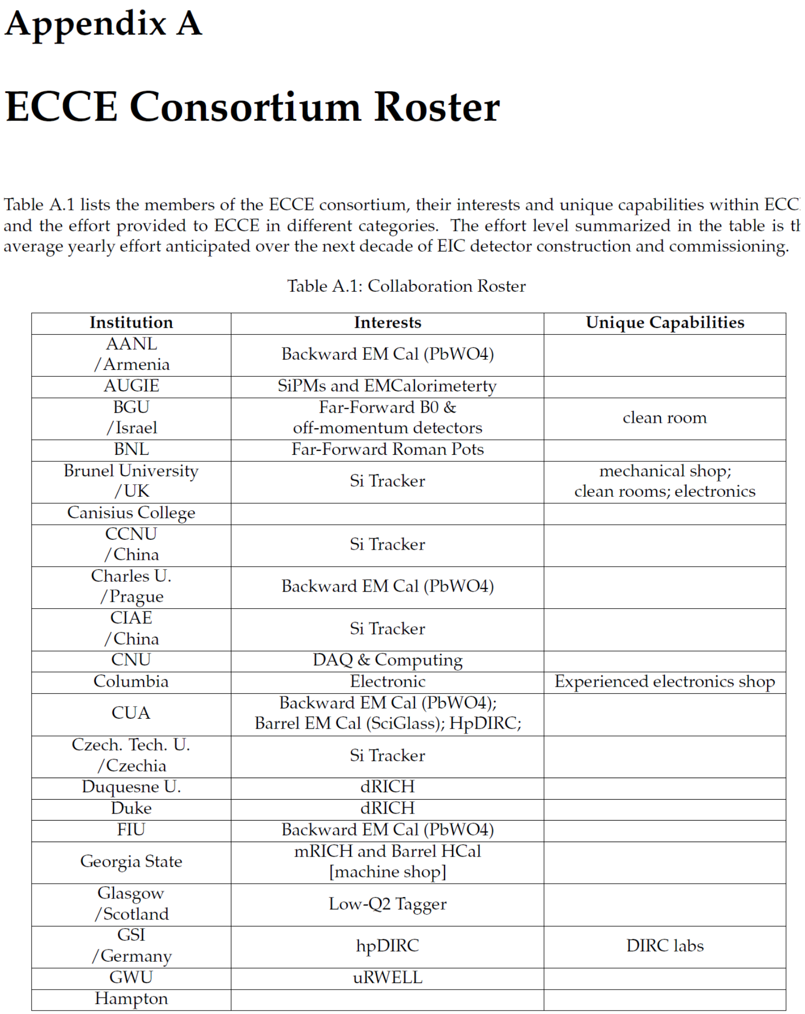
The ECCE consortium consists of 81 member institutions (see Table A.1). Of these, $\sim 45\%$ are international and $\sim 55\%$ are U.S. based. The latter include graduate universities ($\sim 70\%$), undergraduate and minority serving institutions ($\sim 15\%$), and national labs ($\sim 15\%$). The groups are approximately evenly distributed between those that have background in electron scattering and in heavy-ion collision physics. This gives the consortia a broad scientific foundation to maximize the physics output of the EIC.

The consortium is managed by a Steering Committee (SC), that consists of O. Hen (MIT), T. Horn (CUA), and J. Lajoie (Iowa State). They serve the Institutional Board (IB) and lead five 'Teams' that focus on the different areas of study that went into this proposal. Each team is subsequently led by two or more co-conveners:

- **Detector Team:** D. Higinbotham (JLab) and K. Read (ORNL),
  Oversees the technology selection studies, including their GEANT4 implementation and performance studies. Include seven individual working groups, each focused on different detector elements (Tracking; Calorimetry; PID; Far-forward / Far-backward; Magnet; DAQ, Readout, and Electronics; and Infrastructure reuse).

- **Physics Benchmark Team:** C. Munoz-Camacho (IJCLab-Orsay) and R. Reed (Lehigh U.),
  Using full Geant4 simulation to study the detector performance in terms of sensitivity of concrete physical observables. Consist of seven working groups, each focused on different reaction type (Inclusive; Semi-Inclusive; Exclusive; Diffraction and Tagging; Jets and Heavy Flavor; BSM and Precision Electroweak; and simulation integration and support).

- **Computing Team:** C. Fanelli (MIT) and D. Lawrence (JLab),
  Oversees the ECCE simulation infrastructure and coordinates its running on different clusters. Support the use of different event generators and the implementation of analysis tools. Responsible for the development of the ECCE Computing Plan and the use of Artificial Intelligence techniques for detector optimization.



Appendix A

ECCE Consortium Roster

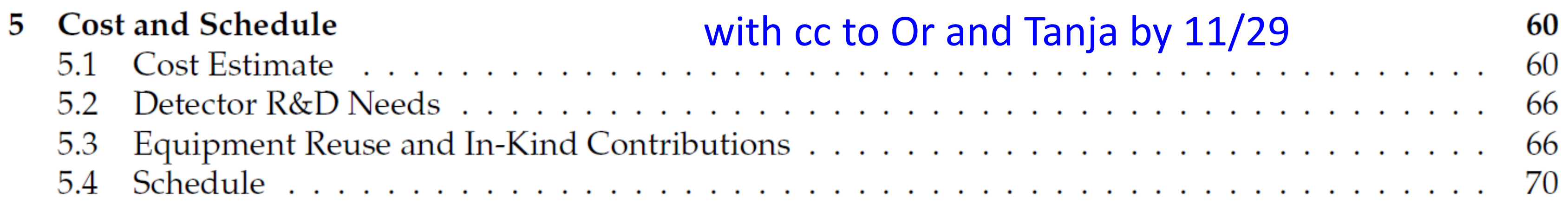
Table A.1 lists the members of the ECCE consortium, their interests and unique capabilities within ECC and the effort provided to ECCE in different categories. The effort level summarized in the table is t average yearly effort anticipated over the next decade of EIC detector construction and commissioning.

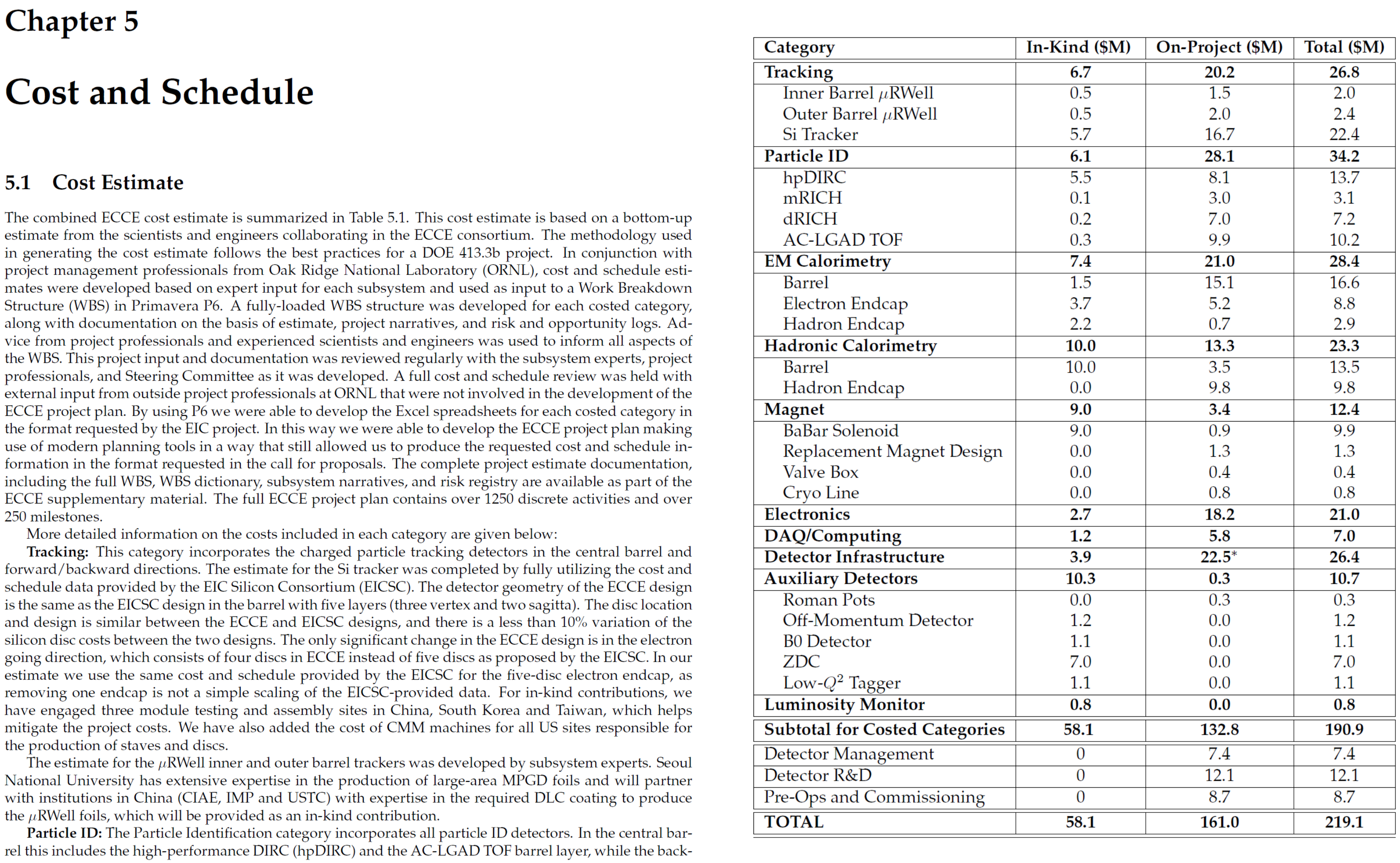
Table A.1: Collaboration Roster

Institution	Interests	Unique Capabilities
AANL /Armenia	Backward EM Cal (PbWO4)	
AUGIE	SiPMs and EMCalorimetery	
BGU /Israel	Far-Forward B0 & off-momentum detectors	clean room
BNL	Far-Forward Roman Pots	
Brunel University /UK	Si Tracker	mechanical shop; clean rooms; electronics
Canisius College		
CCNU /China	Si Tracker	
Charles U. /Prague	Backward EM Cal (PbWO4)	
CIAE /China	Si Tracker	
CNU	DAQ & Computing	
Columbia	Electronic	Experienced electronics shop
CUA	Backward EM Cal (PbWO4); Barrel EM Cal (SciGlass); HpDIRC;	
Czech. Tech. U. /Czechia	Si Tracker	
Duquesne U.	dRICH	
Duke	dRICH	
FIU	Backward EM Cal (PbWO4)	
Georgia State	mRICH and Barrel HCal [machine shop]	
Glasgow /Scotland	Low-Q2 Tagger	
GSI /Germany	hpDIRC	DIRC labs
GWU	uRWELL	
Hampton		

ECCE: Cost and Schedule

- Comments: please send to John (lajoie@iastate.edu) with cc to Or and Tanja by 11/29





Chapter 5

Cost and Schedule

5.1 Cost Estimate

The combined ECCE cost estimate is summarized in Table 5.1. This cost estimate is based on a bottom-up estimate from the scientists and engineers collaborating in the ECCE consortium. The methodology used in generating the cost estimate follows the best practices for a DOE 413.3b project. In conjunction with project management professionals from Oak Ridge National Laboratory (ORNL), cost and schedule estimates were developed based on expert input for each subsystem and used as input to a Work Breakdown Structure (WBS) in Primavera P6. A fully-loaded WBS structure was developed for each costed category, along with documentation on the basis of estimate, project narratives, and risk and opportunity logs. Advice from project professionals and experienced scientists and engineers was used to inform all aspects of the WBS. This project input and documentation was reviewed regularly with the subsystem experts, project professionals, and Steering Committee as it was developed. A full cost and schedule review was held with external input from outside project professionals at ORNL that were not involved in the development of the ECCE project plan. By using P6 we were able to develop the Excel spreadsheets for each costed category in the format requested by the EIC project. In this way we were able to develop the ECCE project plan making use of modern planning tools in a way that still allowed us to produce the requested cost and schedule information in the format requested in the call for proposals. The complete project estimate documentation, including the full WBS, WBS dictionary, subsystem narratives, and risk registry are available as part of the ECCE supplementary material. The full ECCE project plan contains over 1250 discrete activities and over 250 milestones.

More detailed information on the costs included in each category are given below:

Tracking: This category incorporates the charged particle tracking detectors in the central barrel and forward/backward directions. The estimate for the Si tracker was completed by fully utilizing the cost and schedule data provided by the EIC Silicon Consortium (EICSC). The detector geometry of the ECCE design is the same as the EICSC design in the barrel with five layers (three vertex and two sagitta). The disc location and design is similar between the ECCE and EICSC designs, and there is a less than 10% variation of the silicon disc costs between the two designs. The only significant change in the ECCE design is in the electron going direction, which consists of four discs in ECCE instead of five discs as proposed by the EICSC. In our estimate we use the same cost and schedule provided by the EICSC for the five-disc electron endcap, as removing one endcap is not a simple scaling of the EICSC-provided data. For in-kind contributions, we have engaged three module testing and assembly sites in China, South Korea and Taiwan, which helps mitigate the project costs. We have also added the cost of CMM machines for all US sites responsible for the production of staves and discs.

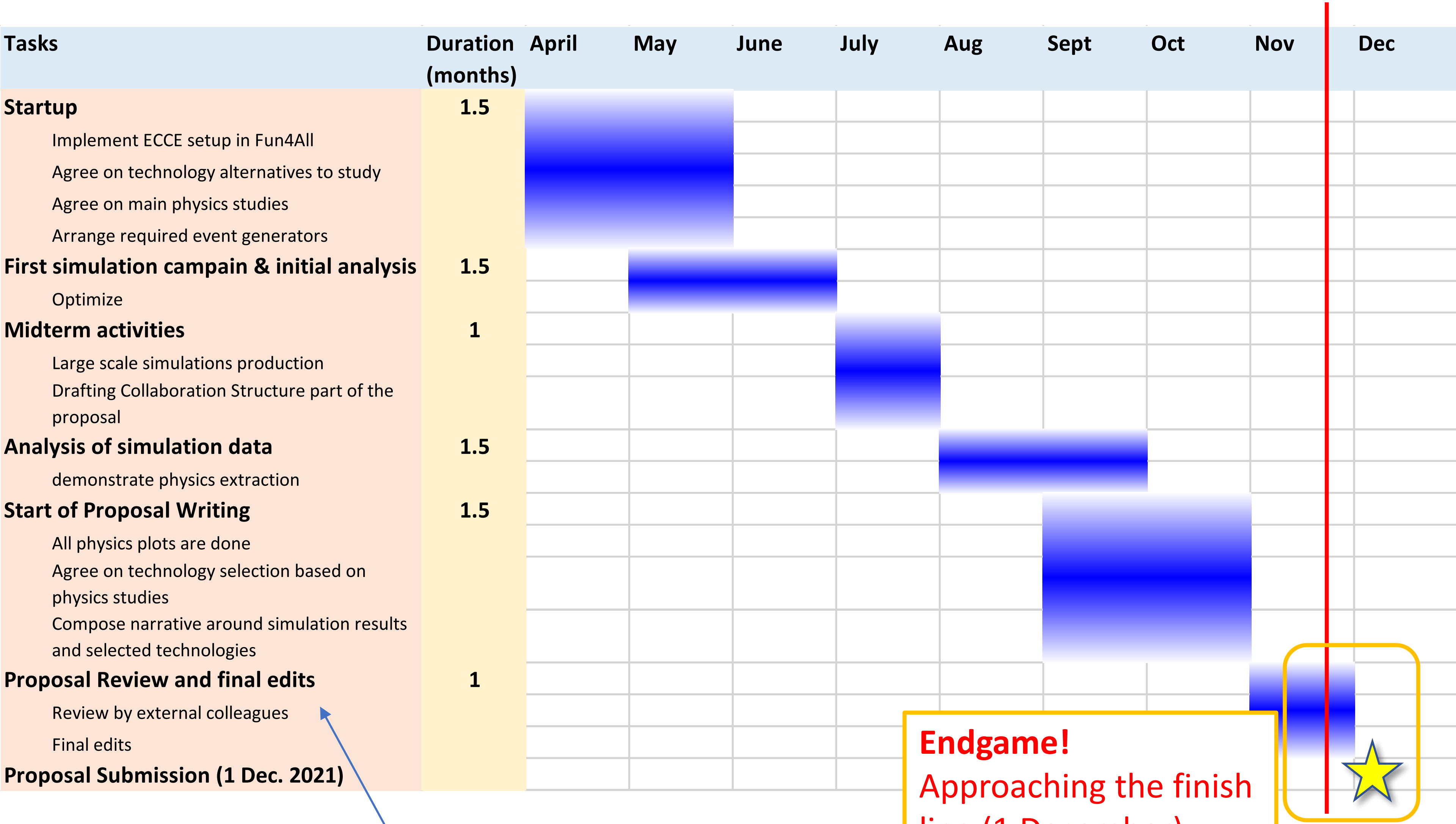
The estimate for the μRWell inner and outer barrel trackers was developed by subsystem experts. Seoul National University has extensive expertise in the production of large-area MPGD foils and will partner with institutions in China (CIAE, IMP and USTC) with expertise in the required DLC coating to produce the μRWell foils, which will be provided as an in-kind contribution.

Particle ID: The Particle Identification category incorporates all particle ID detectors. In the central barrel this includes the high-performance DIRC (hpDIRC) and the AC-LGAD TOF barrel layer, while the back-

Category	In-Kind ($M)	On-Project ($M)	Total ($M)
Tracking	**6.7**	**20.2**	**26.8**
Inner Barrel μRWell	0.5	1.5	2.0
Outer Barrel μRWell	0.5	2.0	2.4
Si Tracker	5.7	16.7	22.4
Particle ID	**6.1**	**28.1**	**34.2**
hpDIRC	5.5	8.1	13.7
mRICH	0.1	3.0	3.1
dRICH	0.2	7.0	7.2
AC-LGAD TOF	0.3	9.9	10.2
EM Calorimetry	**7.4**	**21.0**	**28.4**
Barrel	1.5	15.1	16.6
Electron Endcap	3.7	5.2	8.8
Hadron Endcap	2.2	0.7	2.9
Hadronic Calorimetry	**10.0**	**13.3**	**23.3**
Barrel	10.0	3.5	13.5
Hadron Endcap	0.0	9.8	9.8
Magnet	**9.0**	**3.4**	**12.4**
BaBar Solenoid	9.0	0.9	9.9
Replacement Magnet Design	0.0	1.3	1.3
Valve Box	0.0	0.4	0.4
Cryo Line	0.0	0.8	0.8
Electronics	**2.7**	**18.2**	**21.0**
DAQ/Computing	**1.2**	**5.8**	**7.0**
Detector Infrastructure	**3.9**	**22.5***	**26.4**
Auxiliary Detectors	**10.3**	**0.3**	**10.7**
Roman Pots	0.0	0.3	0.3
Off-Momentum Detector	1.2	0.0	1.2
B0 Detector	1.1	0.0	1.1
ZDC	7.0	0.0	7.0
Low-Q^2 Tagger	1.1	0.0	1.1
Luminosity Monitor	**0.8**	**0.0**	**0.8**
Subtotal for Costed Categories	**58.1**	**132.8**	**190.9**
Detector Management	0	7.4	7.4
Detector R&D	0	12.1	12.1
Pre-Ops and Commissioning	0	8.7	8.7
TOTAL	**58.1**	**161.0**	**219.1**

ECCE Timeline

Today, 22 November



Tasks	Duration (months)	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Startup	**1.5**	▨	▨							
Implement ECCE setup in Fun4All		▨	▨							
Agree on technology alternatives to study		▨	▨							
Agree on main physics studies		▨	▨							
Arrange required event generators		▨	▨							
First simulation campain & initial analysis	**1.5**		▨	▨						
Optimize			▨	▨						
Midterm activities	**1**				▨					
Large scale simulations production					▨					
Drafting Collaboration Structure part of the proposal					▨					
Analysis of simulation data	**1.5**					▨	▨			
demonstrate physics extraction						▨	▨			
Start of Proposal Writing	**1.5**						▨	▨		
All physics plots are done							▨	▨		
Agree on technology selection based on physics studies							▨	▨		
Compose narrative around simulation results and selected technologies							▨	▨		
Proposal Review and final edits	**1**								▨	
Review by external colleagues									▨	
Final edits									▨	
Proposal Submission (1 Dec. 2021)										★

Endgame!
Approaching the finish line (1 December)

Left 9 days, but almost there

ECCE Proposal Submission Global Overview

- Finalize documentation on technical notes by 24 November
  - Physics Analysis/Detector Tech/Computing Notes
- Proposal draft was released today (11/22) and been sent to external colleagues
- Please provide comments by 11/29 to John, Or, Tanja– the sooner the better – they will seek further input from the various conveners
  - Mechanism for comments:
    - GoogleDoc
    - Email to John, Or, Tanja as specified on following pages
- Final edits once feedback received (< November 29)
- Proposal submission 1 December

What is next:

Timeline for Proposal Evaluation

December 1, 2021 Proposals submitted: ATHENA, ECCE, CORE expected

Proposals distributed to Advisory Panel and DAC members

- December 7 or 8 ECCE practice presentations

December 13-15, 2021 First public Advisory Panel meeting (3 days, Virtual)

- Presentations from proto-collaborations
- Panel discussion of DAC input (written report)
- Panel develops homework questions for collaborations to address at January meeting

January 19-21, 2022 Second 3-day public Advisory Panel meeting

- Responses to homework and further input from DAC
- Panel begins Report writing

March 1, 2022 Panel Report & Recommendations submitted

From EICUG Quarterly Meeting 10/28/2021 (Gao/McKeown)

Detector Proposal Advisory Panel Public Meeting December 13-15, 2021

(Remote, via Zoom)

Each Proto-collaboration will make two presentations:

Part 1: Overview of key points, addressing the science requirements in the Call for Proposals, the conceptual realization of the detector given the technology choices, and expected performance via simulation studies.

Part 2: Describe the collaboration structure, the proposed schedule and cost (including potential sources of non-project funding and assumptions), the R&D needs and risks, and potential upgrade paths.

With panel members around the globe, the plan is to have presentations recorded on zoom for the panel to access from a secure site.

Public Meeting site: https://www.bnl.gov/dpapanelmeeting
Registration is required for participation

From EICUG Quarterly Meeting 10/28/2021 (Gao/McKeown)

Draft agenda

December 13, 2021

PST	MST	CST	EST	UK	CEST	JST	Topic	Presenter	Duration (min)
5:00am	6:00am	7:00am	**8:00am**	1:00pm	2:00pm	9:00pm	Introduction		30
5:30am	6:30am	7:30am	**8:30am**	1:30pm	2:30pm	9:30pm	ATHENA Part 1		90
7:00am	8:00am	9:00am	**10:00am**	3:00pm	4:00pm	11:00pm	Break		15
7: 15am	8:15am	9:15am	**10:15am**	3:15pm	4:15pm	11:15pm	ECCE Part 1		90
8:45am	9:45am	10:45am	**11:45am**	4:45pm	5:45pm	12:45am+1	Longer Break		45
9:30am	10:30am	11:30am	**12:30pm**	5:30pm	6:30pm	1:30am+1	CORE Part 1		90
11:00am	12:00pm	1:00pm	**2:00pm**	7:00pm	8:00pm	3:00am+1	DPAP Executive Session		60

December 14, 2021

PST	MST	CST	EST	UK	CEST	JST	Topic	Presenter	Duration (min)
5:00am	6:00am	7:00am	**8:00am**	1:00pm	2:00pm	9:00pm	ATENA Part 2		90
6:30am	7:30am	8:30am	**9:30am**	3:00pm	4:00pm	11:00pm	Break		15
6:45am	7:45am	8:45am	**9:45am**	3:15pm	4:15pm	11:15pm	ECCE Part 2		90
8:15am	9:15am	10:15am	**11:15am**	4:45pm	5:45pm	12:45am	Break		45
9:00am	10:00am	11:00am	**12:00pm**	5:30pm	6:30pm	1:30am	CORE Part 2		60
10:00am	11:00am	12:30am	**1:00pm**	6:30pm	7:30pm	2:30am+1	Technical Implementation of IR2		30
10:30am	11:30pm	1:00pm	**1:30pm**	7:00pm	8:00pm	3:00am+1	Break		15
11:15am	12:15pm	1:45pm	**1:45pm**	7:45pm	8:45pm	3:45am+1	DPAP Executive Session		

Day 3: an open session + executive sessions + closeout

From EICUG Quarterly Meeting 10/28/2021 (Gao/McKeown)

ECCE Strategy – after proposal submission

- ❑ Early homework expected 15 December in closeout. Not clear if further homework will come in December 17-19.
- ❑ SC will meet on 16 December to discuss global strategy to address potential homework
- ❑ ECCE Meeting with Conveners on 17 (or 20?) December
  - SC presents the global strategy
  - Tasks are assigned
  - All tasks are expected to be known by December 20 (latest)
- ❑ ECCE Follow Up Meeting with Conveners in week January 3-7, 2022
- ❑ ECCE Meeting to finalize homework in week January 10-18, 2022

Our first organizational meeting was in February this year

ECCE has grown to almost 100 institutions now

These have been a very busy 9-10 months!

Thanks to everyone for your efforts to make the ECCE proposal a reality!