



Bi-weekly Meeting, June 10<sup>th</sup> 2021

# ATHENA NEWS

## Athena Coordination Committee

**Silvia Dalla Torre, Abhay Deshpande, Olga Evdokimov, Yulia Furletova,  
Barbara Jacak, Alexander Kiselev, Franck Sabatie, Bernd Surrow**

# Bi-weekly Meeting, June 10<sup>th</sup> 2021

## AGENDA

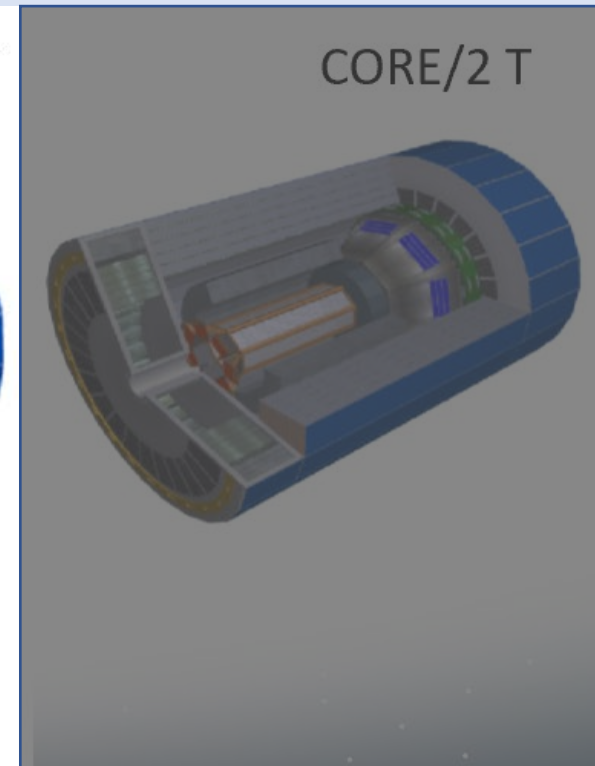
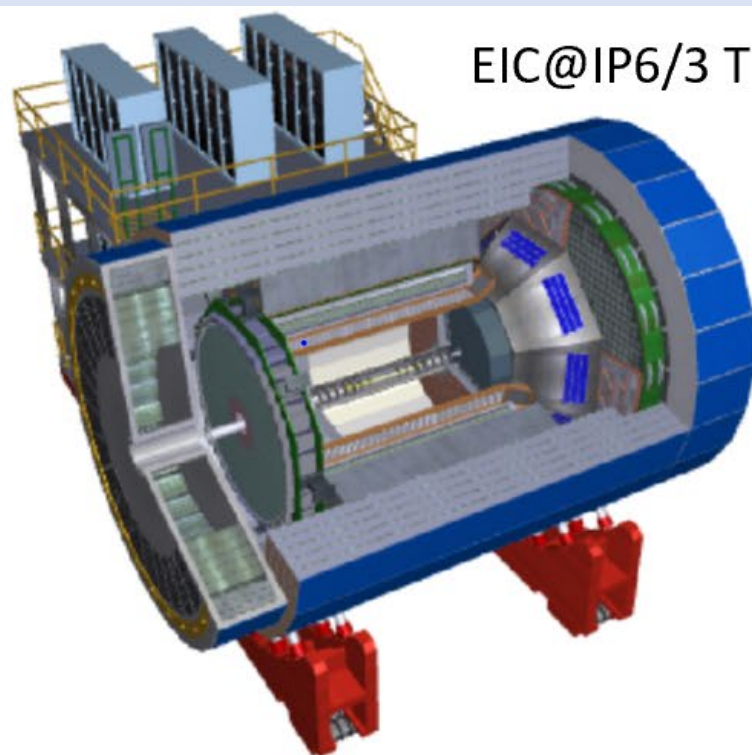
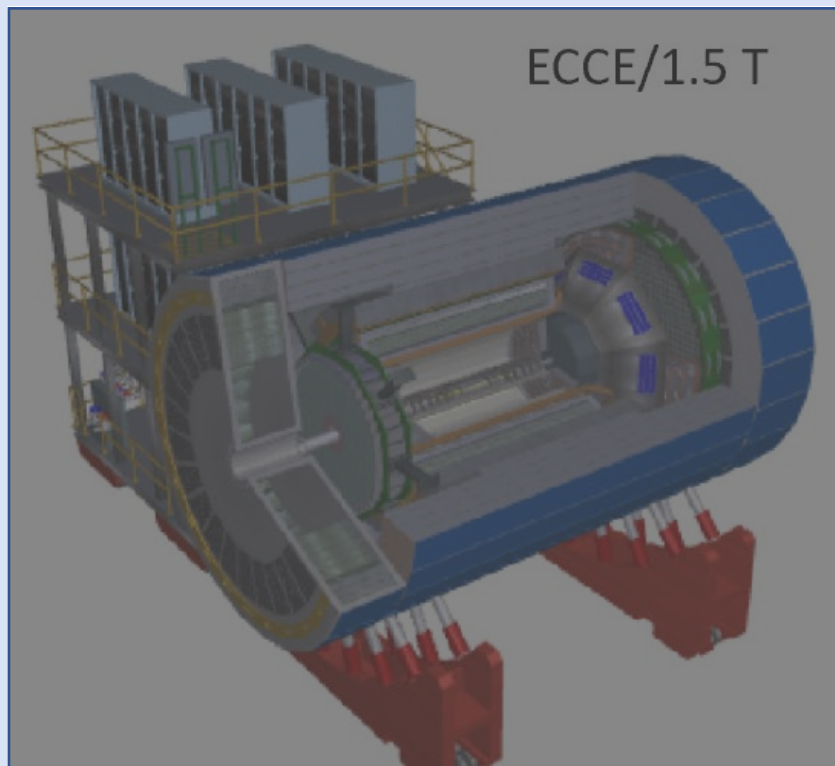
- **Athena News (Silvia)**
- **Charter Draft (Olga)**
- **WG reports, with specific report themes (WG conveners)**
  - **Software & computing**
    - Status of feedback (detector implementation, need of computing resources) from the WGs
    - Timeline for a demonstration of the global simulation
  - **Physics**
    - How the selected golden channels challenge the detector?
  - **Detectors**
    - Technological Readiness & requested R&D
      - also taking into account realistic detector size & detector services

# Joint EIC project meeting, June 3<sup>rd</sup>

- **Reminder:** monthly joint EIC project meetings between the Project management and the representatives of the proto-collaborations
  - **First meeting on May 6<sup>th</sup>**
    - Project status
    - Principles of costing estimates in the proposals
    - Presentation and tutorial of software tools for costing estimates
- **Addendum:** meeting with the 3 proto-collaborations about 3D/Visualization Detector Integration Model
  - on May 17<sup>th</sup>: description and tutorial for ATHENA
  - All information @ in the “Menagerie”: <https://physdiv.jlab.org/EIC/Menagerie/>
- **Second joint meeting on June 3<sup>rd</sup>**
  - **TOPICS**
    - A list of material: **Possible reuse of equipment** (it will be discussed with WG conveners)
    - Across Proto-collaboration meetings on far forward and backward IR regions
    - F-D-F design improving the luminosity at lower CM energies
    - Status of 2nd IR design and plans for release

Joint EIC project meeting, June 3<sup>rd</sup>  
(cont.)

All information @ in the “Menagerie”: <https://physdiv.jlab.org/EIC/Menagerie/>



Joint EIC project meeting, June 3<sup>rd</sup>  
(cont.)Across Proto-collaboration meetings on far forward and backward IR regions

- Far-forward/backward IR meeting, example topics are IR layout, SR and beam-gas background, beampipe design, .....

- Topics: will solicitate input from proto-collaboration far-forward and backward WG conveners
- Organizers: E.C. Aschenauer & Rolf Ent
- Meeting: Mondays 2:00 pm
- Frequency: once per month
- Mailing list: YR-report mailing list [eicug-yr-detector-forward-ir@eicug.org](mailto:eicug-yr-detector-forward-ir@eicug.org)
- ZOOM:  
<https://bnl.zoomgov.com/j/1616690483?pwd=UndKZDk5ekZISEJWVFVEbW9KMxZNQT09>  
Meeting ID: 161 669 0483 Passcode: 127333
- Indigo: <https://indico.bnl.gov/category/284/>
- First Meeting: Monday 7<sup>th</sup> of June 2:00pm, plan is to **discuss the IR-8 design**

- Lepton and Hadron Polarimetry, everything on the one set of hadron polarimeters (H-jet and pC) for EIC, lepton polarimeter in IR, local hadron polarimeter per IR

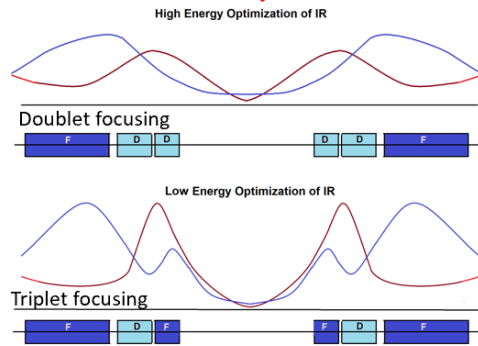
- Topics: will solicitate input from proto-collaboration polarimeter WG conveners
- Organizers: Dave Gaskell & E.C. Aschenauer
- Meeting: 1<sup>st</sup> Wednesday of the month at 3:00 pm
- Frequency: once per month continue EIC-UG meetings as before, during and after YR
- Mailing list: YR-report mailing list [eicug-polarimetry@eicug.org](mailto:eicug-polarimetry@eicug.org)
- ZOOM:  
<https://bnl.zoomgov.com/j/1606575463?pwd=eHQ4b3B3NINnRVIPSGNvSCs3eTVLdz09>  
Meeting ID: 160 657 5463 Passcode: Pol@EIC
- Indigo: <https://indico.bnl.gov/category/280/>



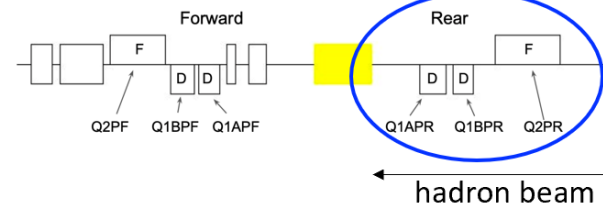
## F-D-F design improving the luminosity at lower CM energies

➤ Advantage independent of Interaction Region → can be done both at IP-6 and/or IP-8

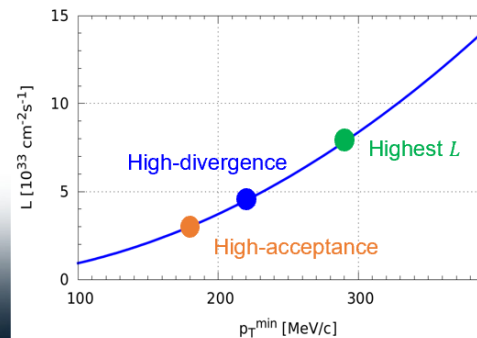
*schematics of concept*



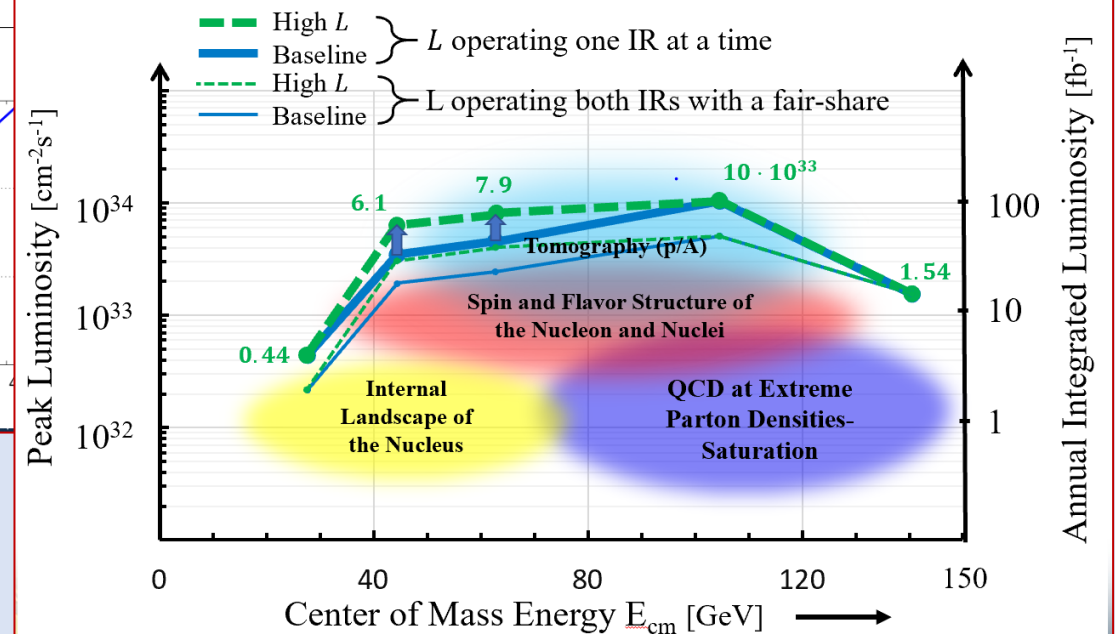
change polarity of quads DDF to FDF  
→ needs to be done only on the rear side  
(incoming hadron beam) hadron quads  
→ change polarity of quads at low  $E_{CM}$



But nothing is for free, there is a direct impact on the low  $p_T$  acceptance for forward scattered particles  $\sim \beta$  (at RP)  $\times$  beam divergency  $\sigma'^*$   
Luminosity increases if  $\beta^* \downarrow$  &  $\sigma'^* \uparrow$   
Highest luminosity → smallest low  $p_T$  acceptance at far forward



E.C. Aschenauer (BNL)  
R. Ent (JLab)



Joint EIC project meeting, June 3<sup>rd</sup>  
(cont.)Status of 2nd IR design  
and plans for releaseComplementarity for 1<sup>st</sup>-IR & 2<sup>nd</sup>-IR

Since CD-1 we made significant progress in the preliminary design for the 2<sup>nd</sup> IR with a focus on complementarity

	1 <sup>st</sup> IR (IP-6)	2 <sup>nd</sup> IR (IP-8)
<b>Geometry:</b>	ring inside to outside tunnel and assembly hall are larger Tunnel: $\varnothing$ 7m +/- 140m	ring outside to inside tunnel and assembly hall are smaller Tunnel: $\varnothing$ 6.3m to 60m then 5.3m
<b>Crossing Angle:</b>	25 <u>mr</u> ad	35 <u>mr</u> ad secondary focus
<b>Luminosity:</b>		different blind spots different forward detectors and acceptances different acceptance of central detector more luminosity at lower $E_{CM}$ optimize Doublet focusing FDD vs. FDF → impact of far forward $p_T$ acceptance
<b>Experiment:</b>		1.5 Tesla or 3 Tesla different subdetector technologies

E.C. Aschenauer (BNL)

R. Ent (JLab)

Electron-Ion Collider 11

First far-frwd/bkwd meeting, June 7<sup>rd</sup>Dedicated to 2<sup>nd</sup> Ir (IP8)

## ■ Highlights of the first far-frwd/bkwd meeting

- Remarkable progress both concerning IR (IP8) design and far-frwd detector design
- Important role of the secondary focus
- Still relevant work behind:

## □ What you will need to do:

- Optimize detector locations (Roman Pots, Off-Momentum Detectors, ZDC, ...)

## □ What is NOT yet done:

- a full integration of the 2<sup>nd</sup> IR into the EIC accelerator
- machine checks for operations
- any background simulations, i.e. beam gas and SR
- no design of the SR masks and simulations how effective the collimator system is with 2 IR → but as electron beam is not touched should be the same as IP-6
- beam pipe design – this will need work as the larger crossing angle will make the transition into B0 more complicated
- a design of the IR magnets – first checks that magnet parameters are reasonable (peak fields okay for conductor) have been done, but have not yet done designs such that we can guarantee cross-talks can be sufficiently limited.


E.C. Aschenauer (BNL)  
R. Ent (JLab)

20:00 → 20:05 **Introduction**


Speakers: Dr E. C. Aschenauer (BNL), Rolf Ent (Jefferson Lab)

20:05 → 20:25 **2nd IR layout**


Speaker: Bamunuvita Gamage (JLAB)

 2nd\_IR\_layout.pdf
20:25 → 20:45 **2nd IR physics performance**

Speaker: Alexander Jentsch (Brookhaven National Lab)

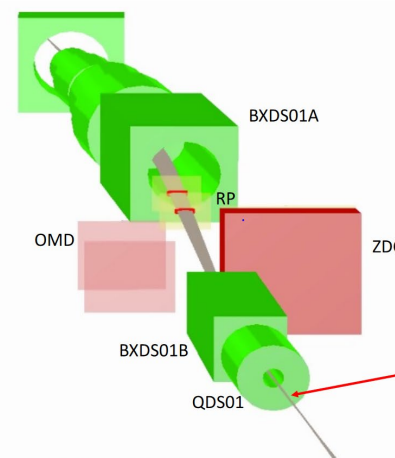
 Far\_Forward\_Meeti...
20:50 → 21:00 **Summary and Next Steps**

Speakers: Dr E. C. Aschenauer (BNL), Rolf Ent (Jefferson Lab)

 Meeting.June07\_v2....

## Secondary Focus

- $p = 275$  GeV protons
- $0 < \theta < 2$  mrad



- Secondary focus behaves nicely and allows for an additional spot for detectors (or a complete reconfiguration).

Secondary focus.

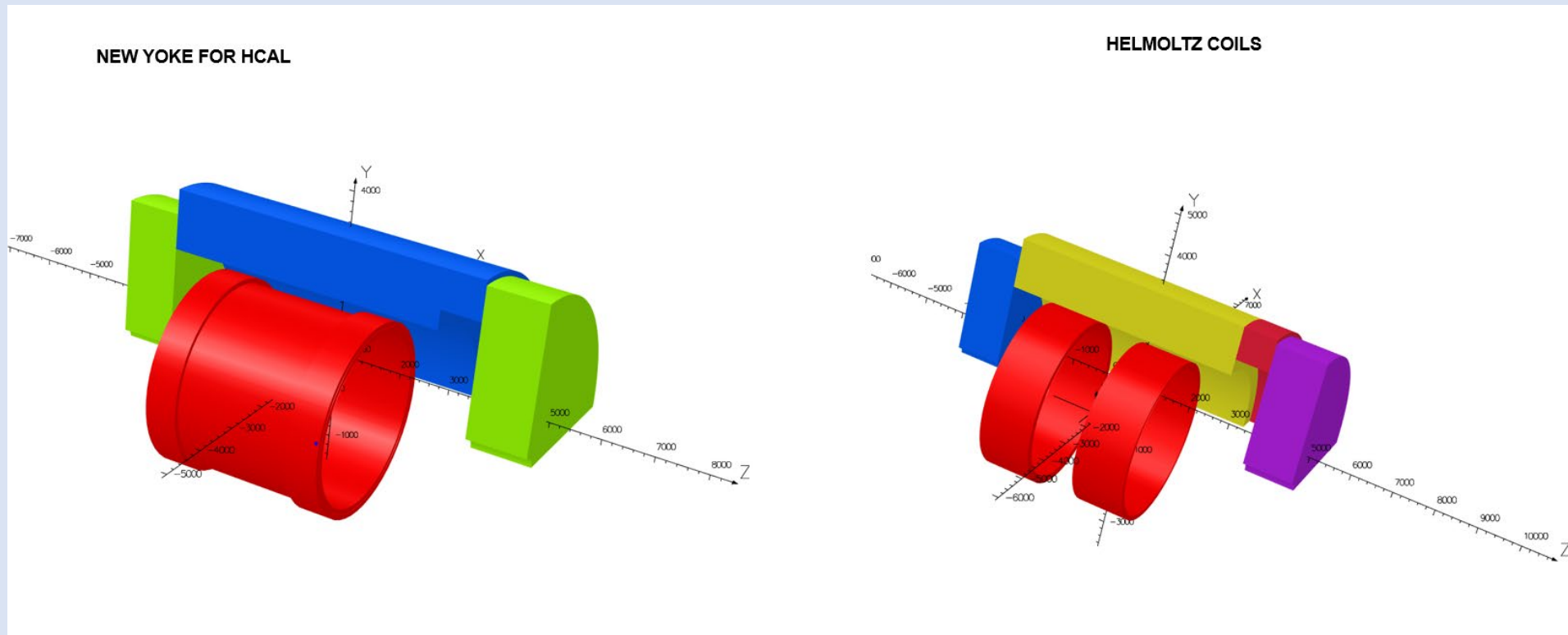
Alex Jentsch



# Second version of 3T field map released

Relevance of providing FAST feedback about solenoid design options !

- Mainly concerning Tracking and PID, but not only!

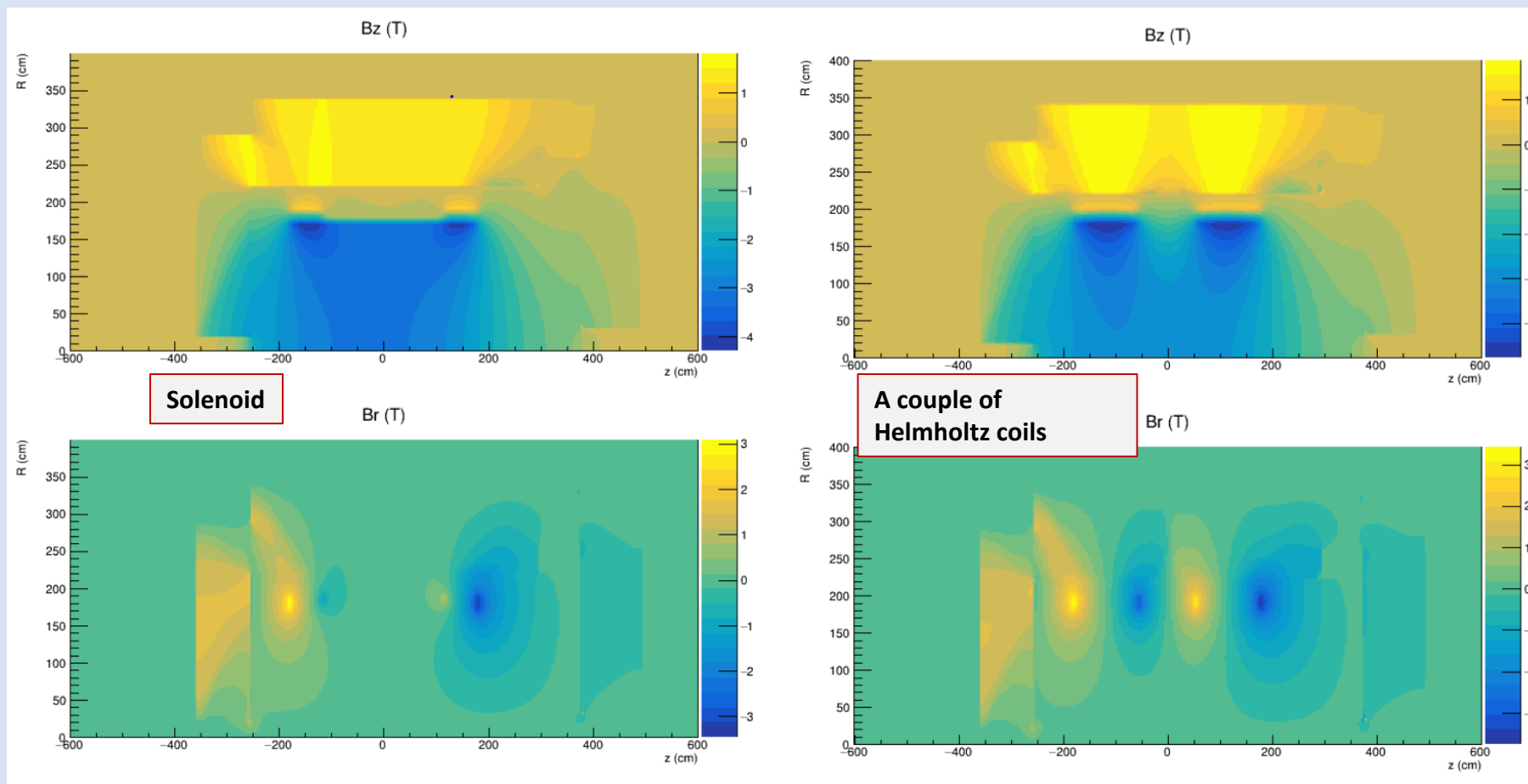


V. Calvelli

# Second version of 3T field map released (cont.)

## Relevance of providing FAST feedback about solenoid design options !

- Mainly concerning Tracking and PID, but not only!



Chandradoy Chatterjee  
Roberto Preghenella

# First meeting of the Proposal Committee

## RIMINDER:



### Proposal committee members

- Costing: Bernd Surrow, Olga Evdokimov, Zhangbu Xu, and Yulia Furletova
- Integration / Global Design: Bedanga Mohanty, Franck Sabatie, Alexander Kiselev, Thomas Ullrich, and Silvia Dalla Torre
- Editing: Abhay Deshpande, Barbara Jacak, Zein-Eddine Meziani, and Peter Jones

Ex-officio / Official EIC project contact: Elke Aschenauer

Thank  
you!

The proposal Committee will have its kick-off meeting TOMORROW

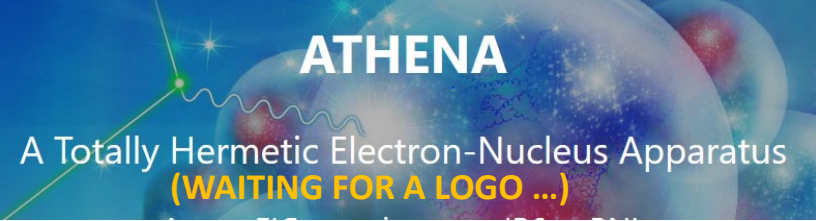
- Main goal: get organized to start working
- Document sharing systems/utilities to be agreed upon
- Then, after the kick-off, the role of WGs in this activity will be major

# Coordination Committee and WGs working together closer and closer

To this purpose, the coordination committee members will follow as much as possible the WG meetings according to this scheme

- Tracking – Barbara, Bernd, Yulia, Frank
- PID – Silvia, Alexander
- Calorimeters – Bernd, Olga
- Far frwd – Yulia, Abhay
- Far bkwd – Yulia, Bernd
- Polarimetry - Abhay
- DAQ – Alexander, Silvia
  
- Software – Yulia, Alexander
  
- Inclusive – Olga, Bernd, Abhay
- SIDIS – Olga, Silvia
- Jets/HF/EW-BSM – Yulia, Olga, Barbara, Abhay
- Exclusive/Tagging – Yulia, Frank





Charter Draft distributed on June 8<sup>th</sup>

A major step for the ATHENA Collaboration

→ Dedicated talk by Olga after this one



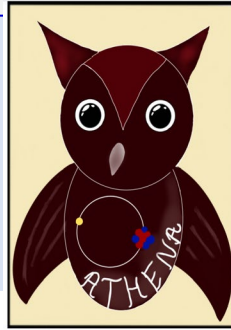
# Forming the ATHENA Elections and Nominating Committee

- The role of this Committee is relevant in the life of the collaboration
- Why forming it now?
  - To save time as soon as the Charter is finalized and approved
- IB members prompted requiring nominations for this Committee (e-mail by Olga on June 2<sup>nd</sup>)
  - Please, send feed-back by this weekend (= by June 13<sup>th</sup>)
  - **THANK YOU !**

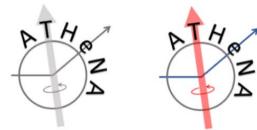
# ATHENA

A Totally Hermetic Electron-Nucleus Apparatus

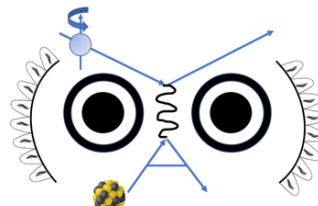
## VOTE FOR YOUR FAVORITE ATHENA LOGOs !



Entry 17



Entry 18 (version a and b)



Entry 23