

# ATHENA Far-Forward Detectors

Alex Jentsch and John Arrington, ATHENA FF WG Co-conveners  
(and many others who contributed slides)

ATHENA Monthly Meeting

June 3rd, 2021

# Administrative

- ATHENA Far-Forward Conveners
  - Alex Jentsch ([ajentsch@bnl.gov](mailto:ajentsch@bnl.gov))
  - John Arrington ([jarrington@lbl.gov](mailto:jarrington@lbl.gov))
- Weekly meetings unless there are not updates on a particular week, or for a holiday.
  - **Meetings will be on Mondays @ 1:30pm EDT.**
  - **Also now have the project FF meetings once a month –**
    - Topics relevant to all collaborations (backgrounds, beampipe, etc.).
    - Next one is THIS Monday @ 2pm EDT.
  - Slides will be stored on the Indico (<https://indico.bnl.gov/category/370/>)
- If you have a topic you'd like to make a presentation on, simply email us and we will put you on the schedule for the next meeting.
- If you haven't already, please join the mailing list:  
<https://lists.bnl.gov/mailman/listinfo/eic-ip6-det-fwd-l>

# Specific Goals

- **Choose technology for the far-forward detector subsystems.**

- No more than two options.
- Must be able to provide information on costing and integration.

- **Estimate services, supports, and active materials.**

- What support structures are needed to hold the detectors?
- Cabling, readout, cooling, etc.

Whole WG.

Conveners with advice  
and help from SWG.

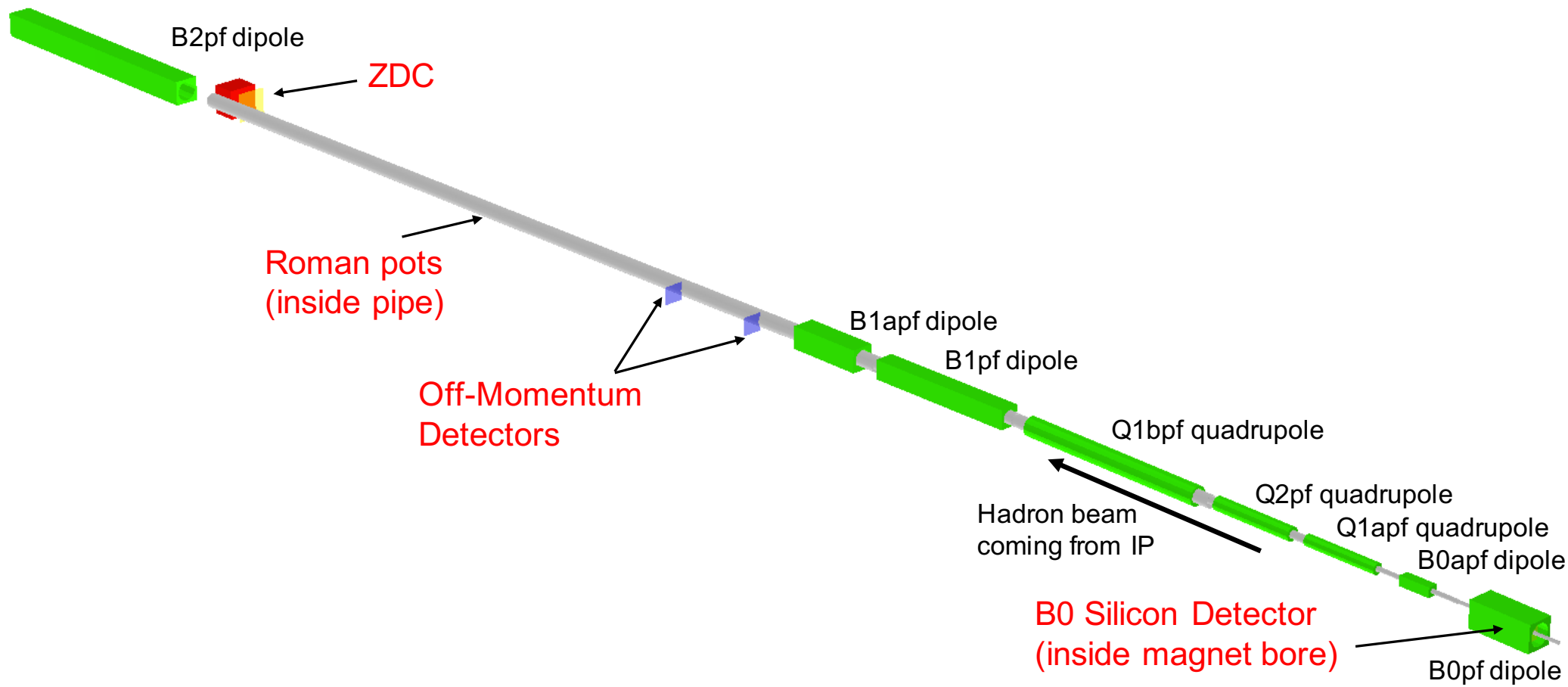
- **Integrate into global simulation model and demonstrate that the subsystems interact well.**

- The software team will help with this – but essentially, make sure your work can be included in the global simulation.
- Currently used frameworks will continue to be used (e.g. Fun4All, EicRoot, etc.).
- Key studies from the YR will be identified to demonstrate performance of fully-integrated system.

- **Provide reasonable estimates of cost.**

- This will greatly benefit from people who have past experience building subsystems.

Conveners +  
experts.



# Summary of Detector Technology Ideas

- Roman Pots
  - AC-LGADs with modified ALTIROC ASIC for readout are a great candidate to meet requirements.
  - Studies underway to understand needed mods to off-the-shelf ASICs to optimize for use with the AC-LGADs.
  - Aiming for “potless” system – need to work out cooling, readout, etc.
- Off-Momentum Detectors
  - Same AC-LGAD technology can be used as for RP system.
- Zero-Degree Calorimeter
  - Starting concept based on ALICE FoCal.
  - Has dedicated EM component (PbW04 and silicon) and hadronic component (Pb scintillator).
- B0 Tracker
  - Need silicon tracking layers for charged particles and timing.
  - Possible use of MAPS for spatial resolution, and AC-LGADs for timing.
  - EM calorimetry or preshower also envisioned for photon tagging. Must be compact to fit in the B0 space.

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**eRD24 & LGAD consortium institutions.**

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**U. Kansas and RIKEN**

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**LANL**

**Above institutions listed are interested parties. Please get involved if any subsystem interests you!**