Proposal – Editing Group Report

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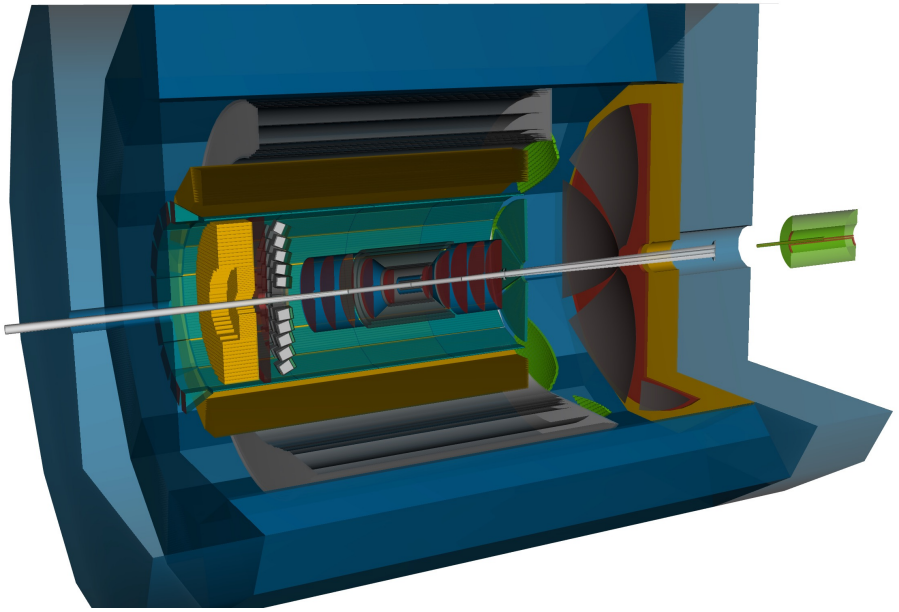


Overview

- Outline of today's update

  Proposal Outline

  Detector and Physics sections
  - What we have so far

  Detector and Physics Templates
  - What inputs we are expecting

  Timeline
  - Where, what, when

  Plan for the next 2 weeks
  - How

Key message:

Moving into final editing phase

We expect your draft text and figures today (Thursday 14 October)

- Proposal Outline (Updated)

  Introduction (2 pages)
  - Global Design Principles
  - Physics Highlights

  Detector (25 pages)
  - Design Considerations
  - Magnet
  - Tracking
  - Electromagnetic Calorimetry
  - Hadronic Calorimetry
  - Particle Identification
  - Far-forward detectors
  - Luminosity and low-Q^2 tagging
  - DAQ and Readout
  - Software Framework
  - Integration Principles
  - Upgrade Path

  Physics (16 pages)
  - Reconstruction Capabilities
  - Origin of Spin
  - Origin of Mass
  - Gluons in Nuclei
  - Other Opportunities

  ATHENA collaboration

  Cost and schedule

Detector and Physics Sections

- Detector (22+2 Pages)

Design Considerations (1)
Magnet (2)
Tracking (4)
- Si vertex detector including introduction to next generation pixel detectors (1)
- Si barrel and disks (1)
- MPGDs (1)
- Hybrid tracker (1)

Electromagnetic Calorimetry (3)
- High resolution crystal electron endcap (1)
- Barrel and hadron endcap EMCAL (2)

Hadronic Calorimetry (2)
Particle Identification (4)
- DIRC
- RICH Detectors

Far-forward detectors (2)
Luminosity and low-Q2 tagging (2)
DAQ and readout (1)
Software Framework (1)
Integration Principles (1)
Upgrade Path (1)

- Physics (16+1 pages)

Reconstruction Capabilities (2)
- Kinematic coverage and resolutions (2)

Origin of Spin (5.5)
- DIS at small x with polarised beams (1)
- 3D quark imaging with hadrons (1)
- 3D gluon imaging with HF & Jets (2)
- 3D quark/gluon imaging with DVCS and TCS (1.5)

Origin of Mass (3.5)
- Gravitational FF through DVMP on nucleons (1.5)
- 3D gluon imaging/GPDs with J/ψ and Υ (1)
- Threshold dependence of Υ production (1)

Gluons in Nuclei (5)
- Nuclear PDFs and saturation
  - DIS & SDIS (1)
  - Electro/photoproduction of phi (0.5)
  - Jet observables and correlations in CNM (1)
  - Jet substructure in CNM (0.75)
  - Heavy quark probes (0.75)
- Energy loss and transport in dense matter
  - Precision probes via SIDIS (0.5)
  - Jets and jet substructure probes at small x (0.5)

Other Opportunities (1)
- How hadrons emerge from partons
- DIS at small x with unpolarised beams
- Backward exclusive meson production

Detector and Physics Templates

- Detector subsystem
  - Name, purpose and scope
  - Technology description
    - Differences / improvements wrt YR
  - Expected performance versus requirements
  - Limitations, if any, for EIC physics
  - Discussion of risks and R&D n
    - (e.g. Is it a well-established techno
    - emerging one? Are there com
    - operation using this techn
    - risk mitigation, and c
    - backup technology
    - cost impact be?)
  - Upgrade path (if an
  - Note: include at least one performance plot within page limit

- Physics topic
  - State big questi n addressed
    - 1 paragraph de n of the measurement & importanc te Paper, NAS report, etc..
  - Whi ors are essential?
    - ts for resolutions, PID?
  - ges of ATHENA for making urement
    - ecision, acceptance, PID, redundancy, etc)
  - pecies and polarization
    - Are multiple beam energy/particle combinations needed?
  - What integrated luminosity is needed for a significant measurement?
  - Suitable for early (1-3 yrs) physics?
  - Please draft 1 page per science goal including text and figures (!)

New: Templates now available in Overleaf.
Will share with WG convenors today.
Please use for new contributions.

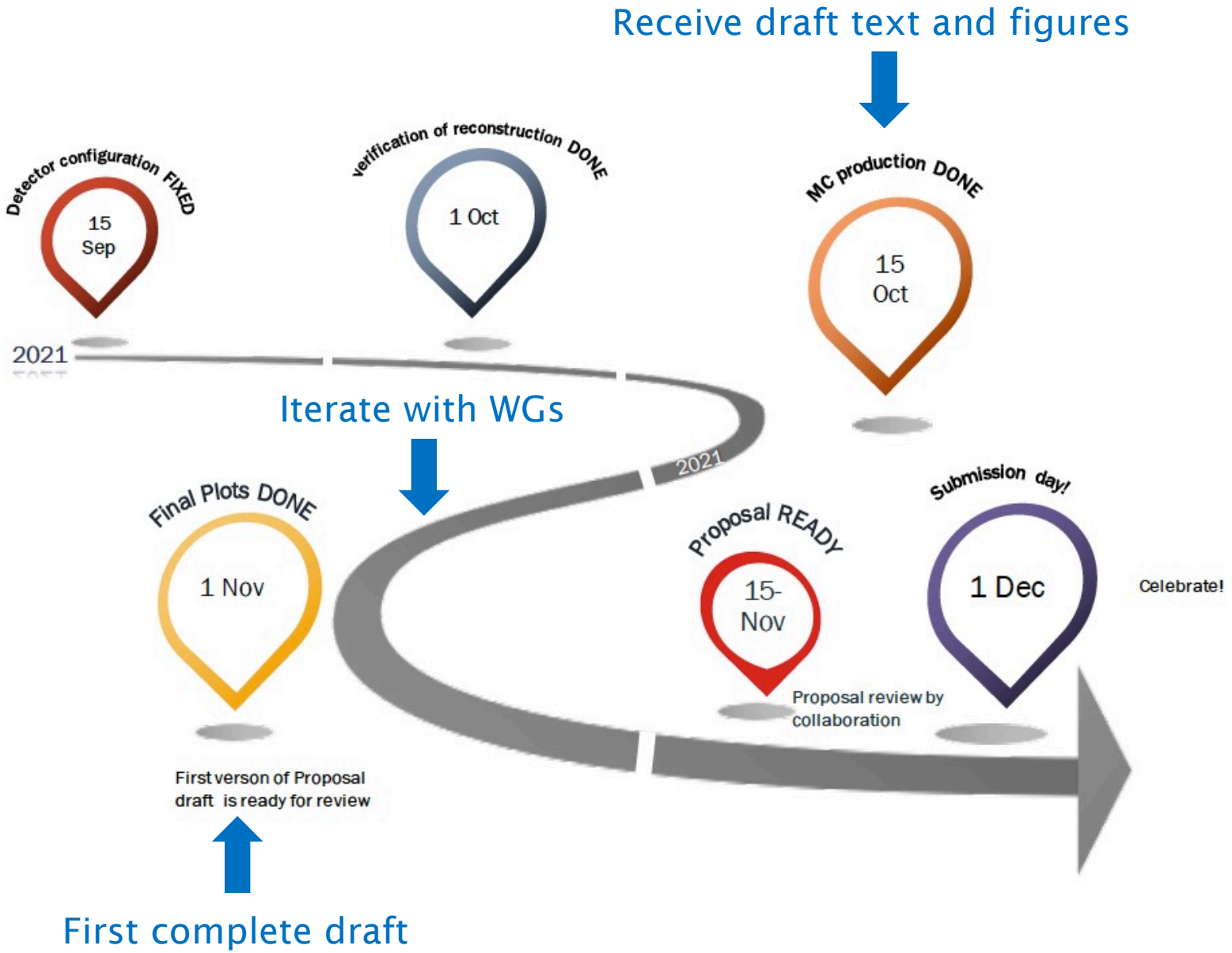
Notes:
1. We should assume 10 fb^{-1} for year 1, and 100 fb^{-1} per year after ~2-3 years.
   This will be split among energy/species combinations run in a given year!
2. Objective is to start with 1 x 10^{33} luminosity, and grow beyond that
3. Objective is to start with 60% (50%) proton (electron) polarization; ultimate goal is 70% each

Proposal in Overleaf

Contents

Note: subsection headings are not final

Timeline


Receive draft text and figures
Detector configuration FIXED
15 Sep
verification of reconstruction DONE
1 Oct
MC production DONE
15 Oct
2021
Iterate with WGs
2021
Final Plots DONE
1 Nov
Proposal READY
15-Nov
Submission day!
1 Dec
Celebrate!
Proposal review by collaboration
First verson of Proposal draft is ready for review
First complete draft

Plan for the next 2 weeks

- We want a first draft of the proposal by 1 November

  Just 2 weeks to go …

- Plan for the next 2 weeks

  Expect to receive all draft text and figures today

  Will be asking for pointers to reference material

  Incorporate inputs into the proposal

  Iterate with Detector and Physics WGs

  Editing and harmonising the different sections

- Next steps …

  Send proposal (detector and physics) for external review early November
  Final edits and collaboration review before submission 1 December

Detector and Physics WGs
Please send us your draft text and figures or contact us TODAY