Proposal – Editing Group

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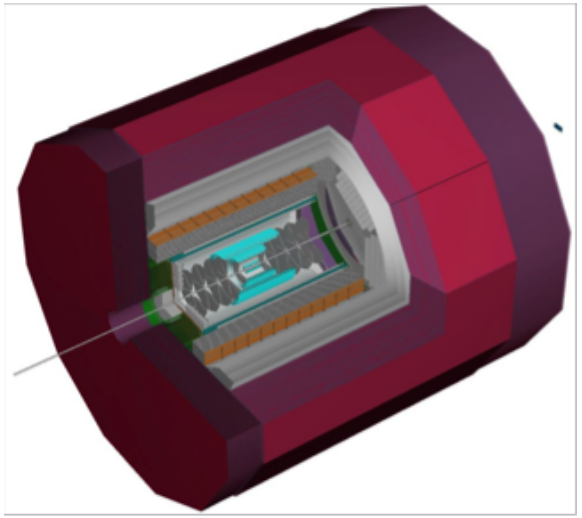


Overview

- Outline of today's update
  - Proposal Outline
  - Detector and Physics sections
    - What we have so far
  - Detector and Physics Templates
    - What we are looking for
  - Timeline
    - Where, what, when
  - Plan for the next month
    - How

- Proposal Outline
  - Executive Summary
  - Introduction
  - Detector (25 pages)
    - Magnet
    - Tracking
    - Electromagnetic Calorimetry
    - Hadronic Calorimetry
    - Particle Identification
    - Far-forward / Far-backward detectors
    - Polarimetry and beam monitoring
    - DAQ and Readout
    - Software
    - Integration principles
    - Upgrade path
  - Physics (16 pages)
    - Origin of spin
    - Origin of mass
    - Gluons in nuclei
    - Other opportunities
  - ATHENA collaboration
    - Collaboration structure
    - Membership, strengths and breadth
    - International contributions
  - Cost and schedule

Detector and Physics Sections (41 pages)

- Detector (25 Pages)

  Requirements in YR & achieved table (1)
  Magnet (2)
  Tracking (5)
  - Si vertex detector including introduction to next generation pixel detectors (2)
  - Si barrel and disks (1)
  - MPGDs (1)
  - Hybrid tracker (1)

  Electromagnetic (3)
  - High resolutio… …ap (1)
  - Barrel and …

  Hadron…
  Partic…
  - DIRC
  - RICH D…

  Far-forwa… backward (2)
  Polarimetry …d beam monitoring (2)
  DAQ and readout (1)
  Software (1)
  Integration Principles (1)
  Upgrade Path (1)

Input received from: Tracking, Far-forward detectors, Luminosity and DAQ

- Physics (16 pages)

  Origin of Spin (6.5)
  - DIS at small x with unpolarised & polarised beams (2)
  - 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 D… …n nucleons (1.5)
  - 3D gluon imaging/GPD… …nd ϒ (1)
  - Threshold depend… …on (1)

  Gluons in Nuc…
  - Nuclear PD…
    DIS & …
    Electro… …on of phi (0.5)
    Jet obse… …d correlations in CNM (1)
    Jet substr… …e 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

Input received from: Inclusive WG and Semi-Inclusive WG

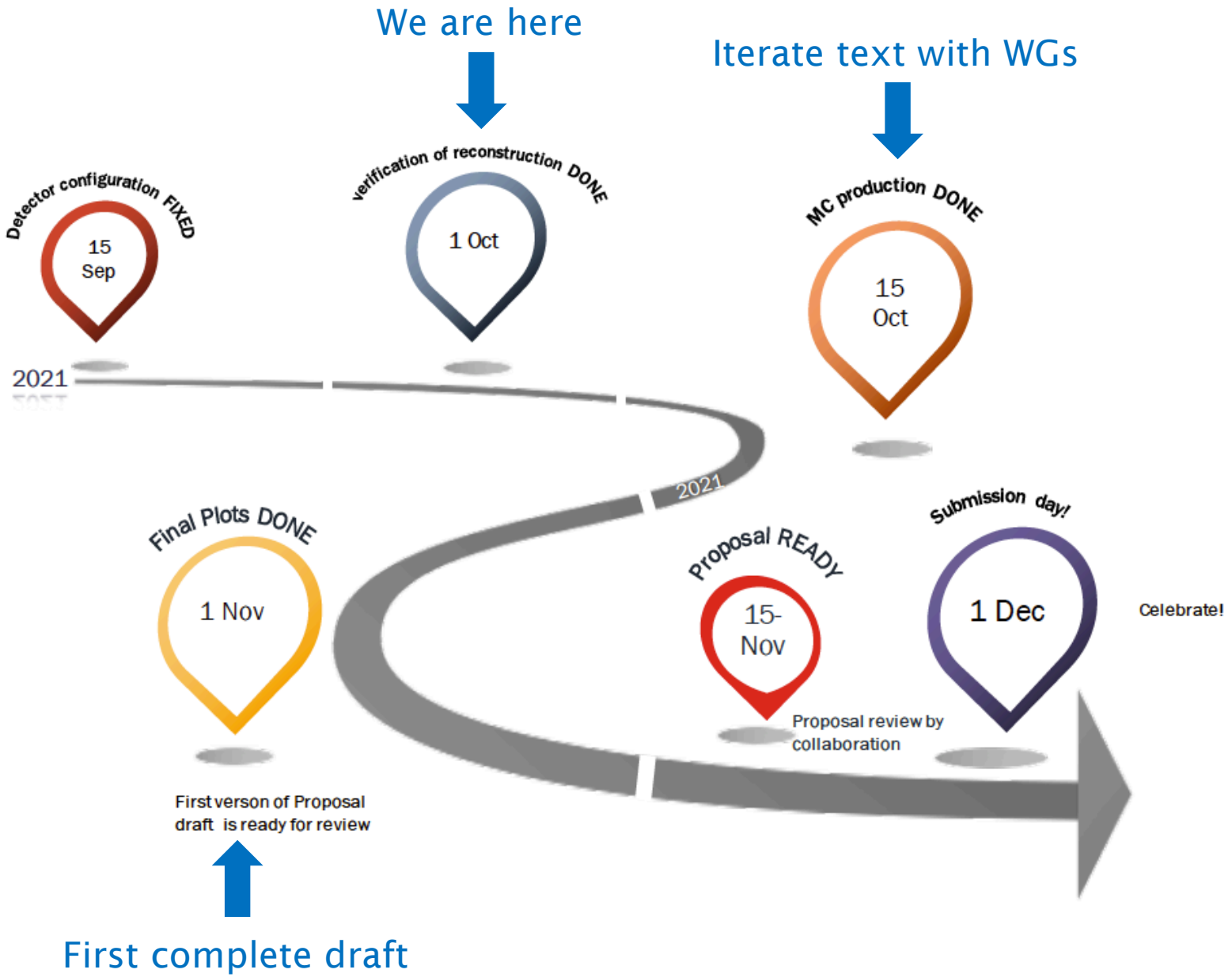
Detector and Physics Templates

- 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 needs
    - (e.g. Is it a well-established technology or an emerging one? Are there comparable systems in operation using this technology? Will R&D provide risk mitigation, and on what timescale? Is there a backup technology? What would performance or cost impact be?)
  - Upgrade path (if any)
  - Note: include at least one performance plot within page limit

- Physics topic
  - State big question addressed
    - 1 paragraph description of the measurement & importance. Refer to White Paper, NAS report, etc..
  - Which ATHENA detectors are essential?
    - What are the requirements for resolutions, PID?
  - Note advantages of ATHENA for making this measurement
    - (e.g. precision, acceptance, PID, redundancy, etc)
  - Species 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 (!)

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

Timeline


We are here
Iterate text with WGs
Detector configuration FIXED
15 Sep
verification of reconstruction DONE
1 Oct
MC production DONE
15 Oct
2021
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 month

- Receive initial text and figures from Detector and Physics WGs

  Now overdue!

- Compile first draft of Detector and Physics sections by 15 October

  Anticipate this will take ~ 2 weeks

- Iterate with Detector and Physics WGs

  Receive final text and figures within ~ 1 week

- Final round of editing ~ 1 week

- First complete draft of proposal is ready for review by 1 November

- Final steps …

  Send proposal (detector and physics) for external review 1-15 November
  Final edits and collaboration review before submission 1 December

Detector and Physics WGs

Please send us your initial text and figures by Monday 4 October