IDEA software and physics

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Plans for the next O(12) months

- mid-term review of the Feasibility Study in Autumn 2023
  - short written reports shall be delivered to the Council on selected topics
  - Includes:
    - Physics case: FCC-ee stand-alone / complementarities
    - Strategic plan for improved theoretical calculations
    - a first documentation of the detector requirements

- Intermediate milestones:
  - FCC Italy-France Lyon NOv 21-23 https://indico.in2p3.fr/event/27968/
  - RD-FCC Collaboration Meeting in Milan, Dec ~12 (2 days)
  -
  - FCC Physics workshop, 23-27 Jan 2023, Krakow
    - https://indico.cern.ch/event/1176398/

    — **Main Goals** —
    - prepare Mid-Term Report and Full Feasibility Study Report
    - monitor progress
    - strengthen the FCC PED community
    - strengthen FCC physics case

    - In person. Coordinators & conveners expected to come !
  - FCC week, 5-9 June 2023, London

6th FCC Physics Workshop

- **Krakow, Jan. 23-27, 2023: https://indico.cern.ch/event/1176398/**

- Jagiellonian University, 5 mn walk from the city centre, 10 mn walk from Wawel Castle

- 20-30 mn to airport by taxi, 45 mn to airport by public transport

- Registration fees: ~ 200 EUR, incl.: day-long coffee breaks, lunches, conf. dinner

- Expected # participants: 150-200 (Liverpool had 642 registrants - remote)

- All coordinators and physics group conveners are supposed to go. And that they should invite as many people as possible! We'll make sure that everyone who is interested could give a talk.

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Next Monte-Carlo campaign

Large production of MC files is in the pipe. Still Delphes-based, fixing the issues seen in the "spring2021" campaign.

Reminder: files here: http://fcc-physics-events.web.cern.ch/fcc-physics-events/

Plan:
- In contrast to "spring2021", keep "raw" Delphes output
    - All leptons, all Particle Flow particles, w/o any isolation, w/o any "duplicate removal"
    - Provide standard "pre-processing" algorithms in FCCAnalyses that users can run at the start of their analysis (lepton isol, total (E, p) , etc)
        - Implementation under development
- Timeline:
    - Small pre-production
    - Validation

    NEED TO SETUP PRODUCTION IN ITALY

    - Start large production in November ?
        - (production per se should be "quick")

Monte-Carlo "contacts" in physics groups

We would like to have some "MC contacts" in the Physics groups. Started to discuss with some exp. conveners. First shot at the "charge" :

Minimum: does not really require technical skills, but one needs to follow *carefully* the instructions and the procedures:

- debug the cards that people have provided (for a new process)
- or write the card (for easy cases), when no card was provided
- when relevant / possible, make some minimal tests
- interact with the Physics Group conveners to determine the number of events to be produced
- submit the jobs

Desirable - either at start, or once the MC contact gets more experienced :

- contribute to the further development of the EventProducer system (e.g. if a new MC program needs to be interfaced). Requires some python knowledge.
- help write the cards and validate them in non trivial cases. Requires some knowledge of the generators, may require interaction with MC authors
- participate in the definition of the next MC production campaign: based on past experience, help define which objects should be written on the files; get feedback from people in the group who run analyses

Dal meeting FCC PHYSICS ORGANIZATION

POSSIBILITA' DI CANDIDARE ITALIANI

Tutorial on Software in October 19-21

- Take note of the FCC-SW hands-on tutorial
  - Oct 19-21
  - https://indico.cern.ch/event/1182767/
  - Survey to select topics :

ADD TUTORIAL AFTER COLLABORATION MEETING IN DECEMBER

Survey
Results for "Hands-On Development Topics"

10 people responded to this survey

Categories of possible development topics — **Ans were d: 10** The hands-on will focus on how to use the existing software to perform an analysis and on some selected development examples. The purpose of this survey is to help selecting a set of hands-on development topics which better fit the needs and desires of the participants.

A. Development of a complete physics analysis: 7 (17.07%)

B. Development of a Gaudi algorithm for Key4hep: 3 (7.32%)
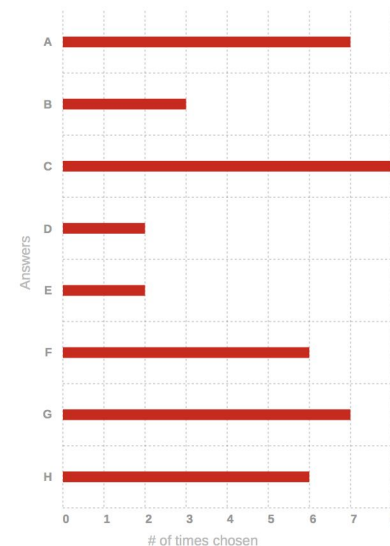
C. Development of a detector concept: 8 (19.51%)

D. Working with EDM4hep: 2 (4.88%)

E. Working with the k4MarlinWrapper: 2 (4.88%)

F. Event display for detector geometry developement: 6 (14.63%)

G. Event display for reconstruction and analysis: 7 (17.07%)

H. Generation of physics events: 6 (14.63%)

Categories: other wished topics — **Answered : 2** Please provide a short description of a topic you would like to have covered in the hands-on session

- Finalize GEANT simulation process to have production of FullSim data with edm4Hep output for Reco studies
- Finalize DD4HEP description
- Finalize flagship physics analyses:
  - Afb
  - Bs->DsK
  - Higgs hadronic

this means also producing an internal document (overleaf) by Krakow