D. Hynds - 20211108

Minutes of the Instrumentation town-hall meeting of 2021/11/08

Present:
Jaap Velthuis, Lana Beck, Joel Goldstein - **Bristol**
Bart Hommels - **Cambridge**
Alex Tapper - **Imperial**
Lingxin Meng - **Lancaster**
Jon Taylor - **Liverpool**
Daniel Hynds, Daniel Weatherill, Georg Viehhauser, Karolos Potamianos, Richard Plackett - **Oxford**
Jens Dopke, Giulio Villani - **RAL**

Apologies:
Laura Gonella - **Birmingham**
Stephan Eisenhardt - **Edinburgh**
Richard Bates - **Glasgow**
Daniela Bortoletto - **Oxford**
Craig Sawyer - **RAL**

Agenda and slides at https://indico.cern.ch/event/1087049/

1 Introduction

- A short presentation by D. Hynds served as introduction and as a discussion prompt. During the recent PPTAP exercise, the lack of instrumentation training was very apparent. In an attempt to address this, discussions between several institutes have taken place and we now propose a set of online lectures covering various silicon and instrumentation topics.

- As a starting point for discussions a hypothetical list of courses was presented, along with a proposal to spread these over two months (Feb - March or March - April)

- It is strongly felt to start this in the current academic year

2 Discussion

The discussion followed broadly the topics prompted in the slides, as follows:

2.1 Course content

- There is need for an experimental techniques course, covering things like basic testing (CV-IV), edge TCT, TPA-TCT, doping profile measurements using different techniques, numeric analysis, etc.

- The topic of exotic materials and more varied applications such as photon science is raised. It is commented that there could be an additional course on "miscellaneous" topics which includes 1- or 2-hour slots to address these topics

- A question is raised about high-performance computing, reconstruction algorithms, etc. It is generally felt that we should avoid too much scope creep, and for the moment prioritise the more hardware/solid-state topics. Parallel courses on these topics could always be added if there is enough demand

- It is suggested to cover more global detector optimisations like tracker layout, choosing the right technology for a given application, etc.

- The issue of RAL/Europractice courses is highlighted - in particular for TCAD. We are not trying to compete with RAL, and there should be a discussion about access and format for courses such as this. There could be a similar issue with Cadence, although kicad is suggested as an alternative tool for this community. For costs and licences it may be that fees would be required for such courses, but remote access to licences purely for the course duration would be highly desirable

- It is commented that the broad approach to combine theory with simulations and practical implementations is good

- Students often have quite a heavy course load in the first year already, which delays getting started with their project. There is a general concern about adding too much material

- Should there be entry requirements for students, such as being able to program, etc.? It is generally felt that there shouldn't be, though it will be possible for individual lecturers to give advanced reading for the courses that they are teaching. Courses could also be arranged such that they follow on from the broader courses in order to build the required background knowledge

2.2 Timing

- It is felt that for the current academic year there is no choice but to run in March/April/May, given the lack of time

- There is a suggestion that these courses don't necessarily have to start after Christmas, and that individual universities may give their students a reduced load of particle physics courses to free time for this instrumentation training. This is likely to be complicated to co-ordinate across institutes however, and would not be possible for the current academic year

2.3 Organisation

- It is broadly agreed that having a single representative per institute sit on a steering committee would be a sensible way to proceed, as proposed

2.4 Audience/scope

- Everyone agrees that we should try to maximise the number of attendees for the courses, including postdocs and beyond (particularly those with an analysis background)

- An open questions is asked, whether we want to open this course up to the wider world? It is generally thought that it is a little premature to make any decision

on this, and we will see how things proceed in the coming year. It is notable that opening up international would be a good opportunity to get more lecturers

3 Action points

A timeline for next steps was presented in the last slide of the discussion. In particular:

1. Institutes should decide on a representative who will join the steering committee to decide on course layout, timing, etc **by Nov 19**
2. A meeting of the steering committee should be organised around Nov 26 to discuss the courses, timescale for this academic year and kick off the hunt for lecturers
3. A second meeting of the steering committee should finalise the course list and lecturers around Dec 10