Introductory remarks

João Guimarães da Costa

April 3, 2019

中國科學院高能物理研究所

Institute of High Energy Physics
Chinese Academy of Sciences

Agenda

CEPC Physics and detector plenary meeting

Wednesday, 3 April 2019 from **15:00** to **18:40** (Asia/Shanghai)
at **IHEP (A623)**

Manage

Vidyo Info

Room Name	CEPCDP
Link	http://vidyo.ihep.ac.cn/flex.html?roomdirect.html&key=cYMGQNUkDuREvkXhlbYRcpUlkI
Extension	

Wednesday, 3 April 2019

15:00 - 15:20	Introduction and News *20'* Speaker: Joao Guimaraes Costa	
15:20 - 15:50	MOST 2 chip design for Vertex detector *30'* Speaker: Mr. Wei WEI Wei (高能所)	
15:50 - 16:20	Summary of calorimeter workshop *30'* *Summary of CEPC Calorimeter workshop: https://indico.ihep.ac.cn/event/9195/* Speaker: Dr. Yong Liu (Institute of High Energy Physics)	
16:20 - 16:40	New CEPC software framework *20'* Speaker: Dr. Gang LI (EPD, IHEP, CAS)	
16:40 - 17:00	Update on the TPC R&D *20'* Speaker: Dr. Huirong Qi (Institute of High Energy Physics, CAS)	

News

- **CDR update:**
  - Would like to make one update of CDR to include some missing names from the authorship list. Please send **now** to Zhaoru (zhangzr@ihep.ac.cn) **any requests** for additions.
  - We will do this ONLY this **one time**.
- **CEPC Topical Workshop: Theoretical Uncertainty Controls for the CEPC measurements**
  - IHEP, April 4, 2019
- **CEPC Workshop European Edition 2019**
  - Oxford, April 15-17, 2019
- **CEPC MOST2 Pixel Detector, Satellite Meeting , Oxford**
  - Oxford, April 17, 2019 - afternoon 2 pm
- **2019 International Workshop on CEPC**
  - Beijing, November 18-20

CEPC Topical Workshop

CEPC Topical Workshop: Theoretical Uncertainty Controls for the CEPC measurements

Thursday, 4 April 2019 from **08:30** to **18:00** (Asia/Shanghai)

Support ***Email:*** niuwy@ihep.ac.cn ***Telephone:*** +86 01088236054

Thursday, 4 April 2019

08:30 - 17:30 Agenda

09:00 **Bhabha scattering** *1h20'*
Speaker: Andrej Arbuzov

10:40 **Overview of the Generator MCSANCee** *1h20'*
Speaker: Renat Sadykov

14:00 **One-loop EW corrections for the process > > > ee -> gamma gamma, gamma gamma -> ee (VitaliiYarmolchik)** *1h20'* (A415)
Speaker: Yahor Dydyshka

15:40 **Helicity amplitudes for bremsstrahlung 2f -> 2f(gamma), 2f -> 2b(gamma)** *1h20'*
Speaker: Yermolchyk Vitaly

https://indico.cern.ch/event/783429/overview

CEPC Workshop, Oxford

Plenary: Monday, morning

09:00	**Introductions and goals** *Oxford*	*Prof. Daniela Bortoletto* 09:00 - 09:15
	Physics Motivation *Oxford*	*Matthew Philip Mccullough* 09:15 - 09:45
	FCC Status *Oxford*	*Alain Blondel* 09:45 - 10:15
10:00	**CepC Machine** *Oxford*	*Jie Gao* 10:15 - 10:40
	Coffee Break *Oxford*	10:40 - 11:10
11:00	**ILC Status** *Oxford*	*Marcel Stanitzki* 11:10 - 11:40
	CLIC STATUS *Oxford*	*Aidan Robson et al.* 11:40 - 12:10
12:00	**CepC- Detector & Physics** *Oxford*	*Joao Barreiro Guimaraes Da Costa* 12:10 - 12:35
	CepC: CDR *Oxford*	*Marcel Vos* 12:35 - 12:55

https://indico.cern.ch/event/783429/overview

CEPC Workshop, Oxford

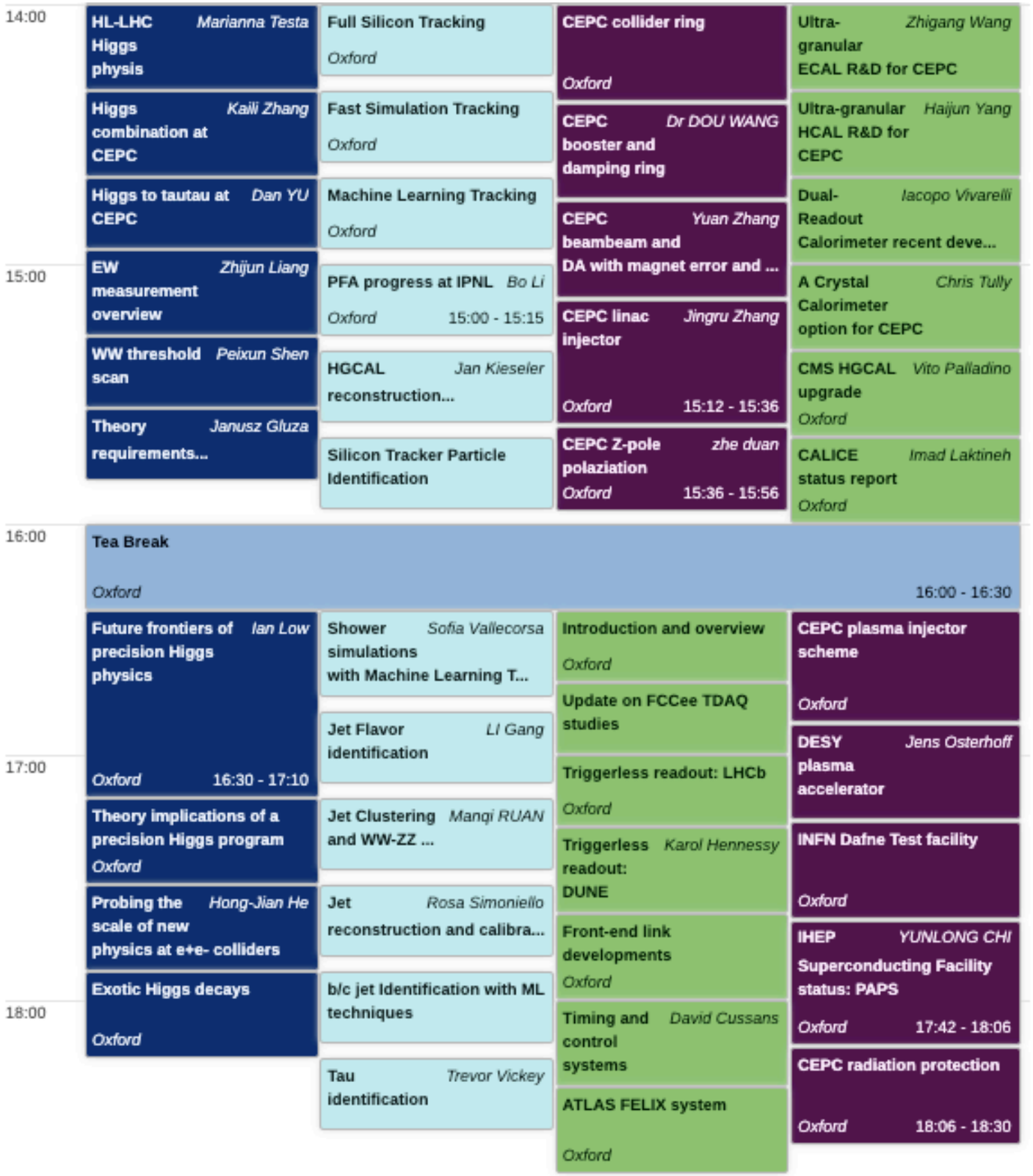
Parallels:
Monday, afternoon

Physics

Simulation and Tools

Detector R&D

Accelerator



https://indico.cern.ch/event/783429/overview

CEPC Workshop, Oxford

Parallels:
Tuesday, morning

Physics

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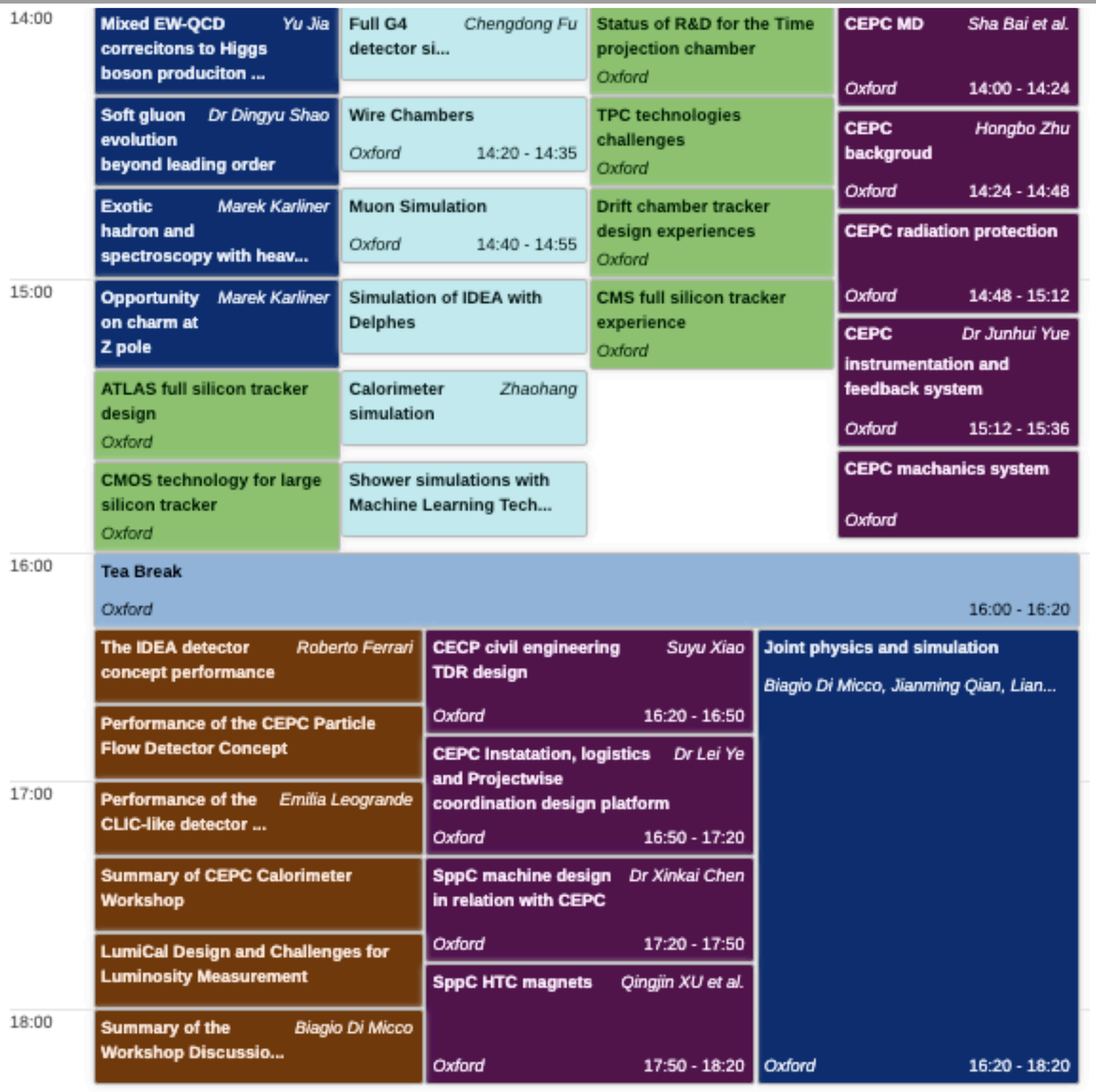
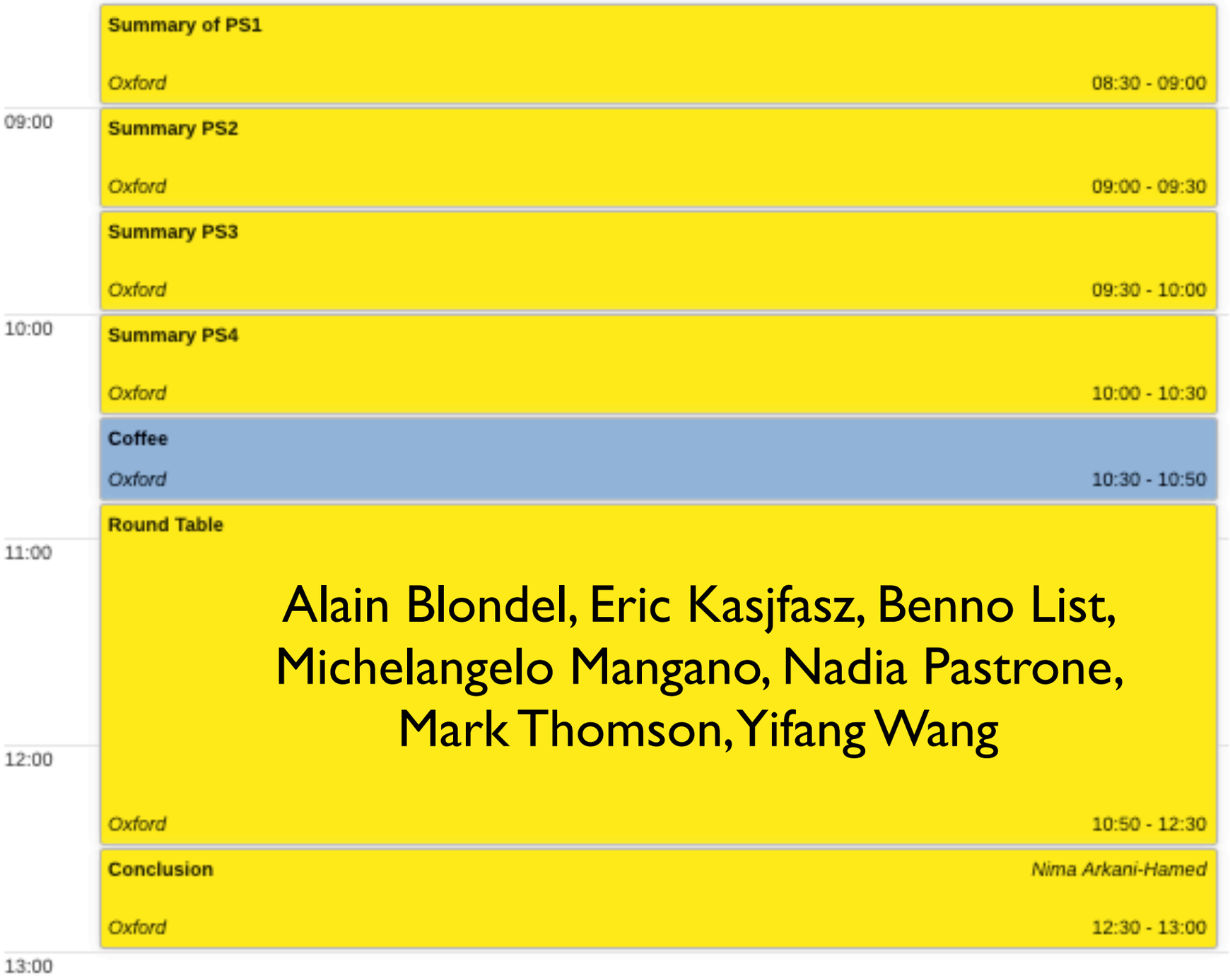


https://indico.cern.ch/event/783429/overview

CEPC Workshop, Oxford

Plenary: Wednesday, morning

Summary talks from four parallel sessions



IAC Report - Recommendations

- Physics and Detector Recommendations
  - 1) Establish an expert **Detector R&D Committee,** set up with input from the international community, which should oversee detector-related R&D activities. Once established, this committee could become recognized by the international authorities (e.g. funding agencies). Such a committee could evolve in due time to become the body reviewing, and recommending for approval, of the **CEPC detector collaborations**. This committee should be established expeditiously.
- Seeking input for international members of this committee. Please send me email with suggestions.
  - Aiming to cover a broad range of countries.
- Committee expected to be defined by Oxford Workshop

IAC Report - Recommendations

- Physics and Detector Recommendations
  - 2) Prepare **comprehensive progress reports** on detector development work (R&D of technologies, engineering and integration studies, software and computing, and physics performance) **in due time (2-3 years)**, preceding Letters of Intent, to be reviewed by the Detector R&D Committee.

    - We are not working on TDRs, which makes it a little confusing. These reports are supposed to be produced by 2021-2022.

  - 3) Strengthen the **theoretical physics effort from Chinese institutions** for the CEPC.

  - 4) Incorporate in the physics studies the implications of a run at collision energies at and above the **tt-bar threshold**. This will have an impact not only on the determination of the top quark properties (mass, EW couplings, and indirect sensitivity to the ttH vertex), but also on Higgs measurements, via the vector boson fusion process.

Summary on IAC

- Re-organize structure to include international colleagues in the leadership structure

  - **Collect nominations for subgroups leadership**

  - Goal was appointments by the Oxford workshop, but we just didn't work on this. Suggest to collect nominations now and appoint people soon after the workshop.

- Plan for a detector progress report (Pre-TDR) by ~2021 (2-3 years from now)
- Focus on detector R&D and try to attract international participation to these activities

Physics topics in need of further exploration

- tt-bar threshold physics.
  - top quark properties (mass, EW couplings, and indirect sensitivity to the ttH vertex)
  - Higgs measurements, via the vector boson fusion process.
- From CDR international review report:
  - We encourage the CEPC study group to continue and extend the effort to explore the potential of CEPC beyond the established Higgs/electroweak programme.
    - Expand flavor physics studies
    - Expand QCD physics studies
  - Further recommendations for New Physics Searches, EW precision measurements and Higgs
  - Document synergy of HL-LHC

Further points

- Compare sub-detector options on equal footing
  - Requires an extend MC simulation framework to be shared
  - Need for detector R&D people to get involved in the simulation of their own detectors
- Check detector operability at the highest luminosities possible at the Z-pole
  - Make careful studies of background effects on all detectors
- Develop a common power management structure taking into account the specificity of CEPC
  - Provide solid power consumption estimates for all sub-systems