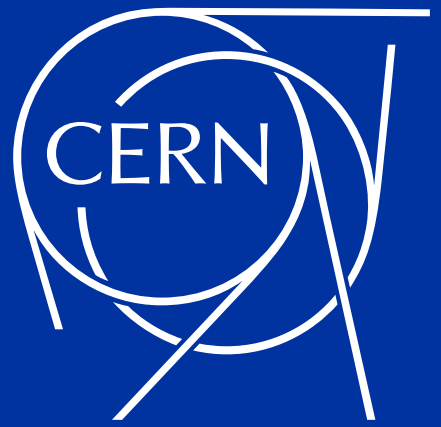


Welcome to the 2024 EP R&D Day!

Giovanna Lehmann Miotto

Practical information for today

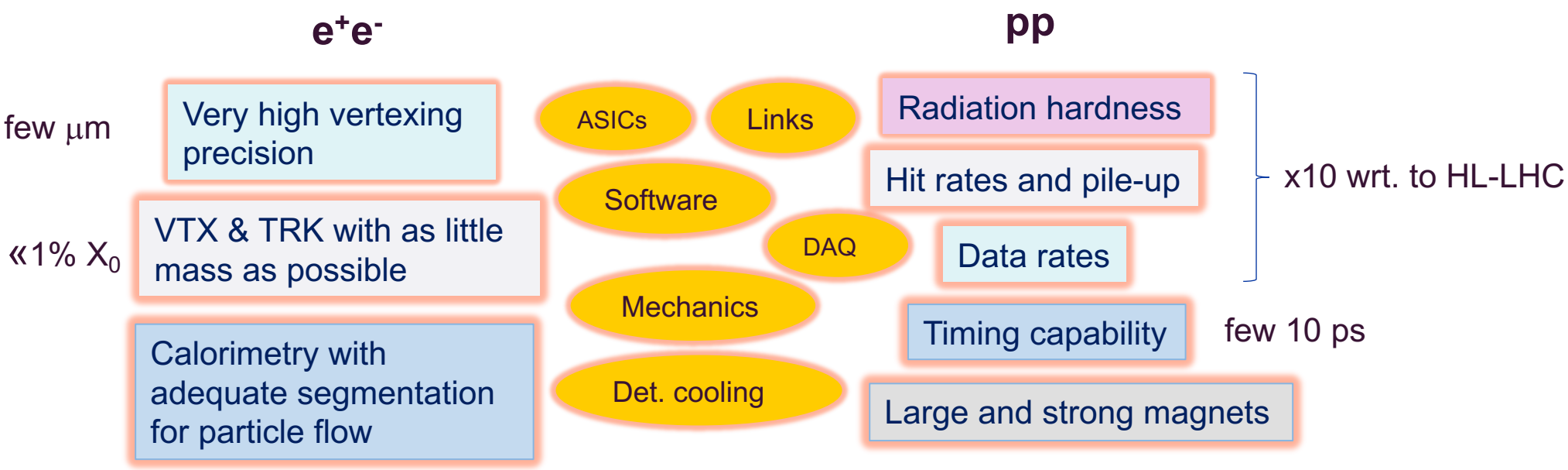
- **Agenda: https://indico.cern.ch/event/1395929/**
- **We have a packed program:**
  speakers will have to respect their time allocation, and there won't be too much time for discussion during the sessions
- **This year we are introducing for the first time a poster session, in collaboration with AIDAInnova**
  - Reviewers will visit the posters: authors, please stand by your poster to answer questions!
  - We warmly invite everyone to stay until the best posters awarding cerimony at the end of the meeting
- **Please profit from the coffee/lunch breaks to meet and discuss about the presentations and the posters**

EP R&D, a bit of history

- **CERN has a tradition in R&D programs for developing technologies and facilities, in time for next experimental challenge**
  - Launched in 1990: Detector Research and Development Committee (DRDC). R&D on technologies used in LHC experiments phase-0 (2008)
  - ’White Paper’’ R&D program (2008-2011). R&D on technologies for phase-I upgrades
- **With the “ending” of the R&D for LHC Phase-II upgrades EP launched the EP R&D programme on detector technologies towards LS4+ HL-LHC, FCC-ee/pp, linear colliders, …**
  - Initially approved for 2020-2024
  - The programme continuation (2024-2028) was approved in 2023 and is very much in line with other detector R&D efforts in the wider community (ECFA DRDs)

EP Detector R&D programme (2024-2028)

A strategic technological R&D programme, not experiment specific developments.
Its results will enable future projects to develop and build optimal detectors.
We use the requirements of HL-LHC and studies like FCC (ee/hh), CLIC, … as guidelines.



Concentrate on key detector technologies, **but equally important are mechanics, infrastructure, electronics, data acquisition, software and experimental magnets**

EP R&D workpackages 2024-2028

WP 1 – Silicon detectors
- Hybrid Si dets
- Monolithic Si dets
- Si Modules
- Simulation and characterisation
- Beam telescopes & testing tools

DRD3 DRD7

WP 2 – Gaseous detectors
- Novel micropattern structures
- Large area systems
- Picosec detectors
- Gas studies
- Tools for modelling and simulation
- Lab test electronics

DRD1

WP 3 – Calorimetry and light dets
- Noble liquid calorimetry with fine segmentation
- Scintillator based calorimeters
- RICH detectors

DRD4 DRD6

WP 4 – Mechanics
- Low mass mechanical structures
- Robotics
- Efficient coolants

WP 5 – IC technologies
- Interconnects & advanced packaging
- SoC and on-detector intelligence
- Powering solutions

DRD7

WP 6 – High speed links
- Rad hard 28 nm ASIC with > 25 G transmission, SiPh
- RH-FPGAs
- Timing distribution, protocols

DRD7

R&D towards minimised environmental impact

WP 7 – Software
- Simulation (ML, GPUs)
- Reconstruction
- Analysis tools, histogramming
- Heterogeneous software

WP 8 – Magnets
- Advanced powering
- Al-stabilised superconductors
- Demonstrator magnets
- Control and instrumentation

WP 9 – DAQ
- AI based data taking
- COTS technologies for DAQ
- Generic FPGA based readout board
- Power & cooling efficiency

DRD7

Enjoy the day!

For more information and contacts, visit
https://ep-dep.web.cern.ch/node/7537