

ETO Task force for ET detector layout - 9th weekly meeting

F. Sorrentino

Classification of detector layout configurations

- ETO task force design effort will yield a number of different configurations for detector layout
 - to be then evaluated in terms of risk, flexibility, performance, and impact on civil infrastructure cost
- Need to assess which are the configurations under study
 - very wide phase space of possible configurations, generated by the combination of
 - a number of discrete options, e.g. tower height for a given category, optical routing of SQZ beam to OFI, etc.,
 - and some continuous variables, e.g. the length of optical cavities.
 - we should decide how to choose the detector layout configurations for the comparative analysis.
 - some comparative information will be given at the level of individual design parameters (e.g. TRL for design of suspensions or cryostat)
 - but our work should eventually compare **a few global configurations** in order to be used by local teams in their technical feasibility studies

Classification of detector layout configurations

- general criteria for configurations down selection:
 - provide a representative sampling of the space of configuration parameters, i.e. show how risk, flexibility, performance and cost scale with design options
 - identify configurations with sufficiently different impact on civil infrastructure and/or on detector layout
 - provide a usable set, i.e. a small number of options
 - initial brainstorming in the task force led to identify 4 coarse concepts
 - FCs in main tunnels
 - optics co-location in vertex
 - double cavern
 - separation of HFI from LFI)
 - we'd likely define sub-options around such main configurations in order to represent the impact of main design parameters;
 - likely having up to 3÷4 sub-options for each configuration would still be quite manageable

Classification of detector layout configurations

- Start discussing the general concept from the specific example of the outcome of Pisa meeting
 - A [document](#) listing the main changes with respect to the baseline 2L layout was started during the last risk analysis meeting
 - group changes done on optical layout and on vacuum system envelope
 - consider a set of sub-options depending on the various implementations for the FC relocation
- Specific topics for discussion:
 - does this decomposition into options and sub-options make sense in general?
 - would we consider additional sub-options other than the choice of ITF planes and the routing of SQZ beam to OFI?
 - do we identify reasons to just exclude any of the suggested sub-options?

Draft agenda for Amsterdam meeting

- Input from discussion at last weekly meeting:
 - Include discussion on tunnel diameter
 - Include update on tower categorisation
 - Indicate essential and optional sessions

Draft agenda for Amsterdam meeting

1st day - 18/03

Morning

- plenary: update on background information and main tools
 - flexibility demands from optical layout
 - tools and criteria for civil infrastructure
 - technical infrastructure
 - science case
 - requirements management
 - risk and flexibility
- plenary: discussion on tunnel diameter
- plenary: definition of work plan and tasks assignment

Afternoon

- parallel: detector layout: vertex cavern reduction by optics merging
- parallel: tower categorisation
- parallel: TRL analysis

2nd day - 19/03

Morning

- plenary: summary from previous day
- parallel: detector layout: double cavern
- parallel: civil engineering criteria
- parallel: system decomposition (optional)

Afternoon

- plenary: summary from morning
- parallel: detector layout: double cavern (optional)
- parallel: risk analysis

3rd day - 20/03

Morning

- plenary: summary from previous day
- parallel: detector layout: separation of HFI and LFI
- parallel: noise budget and science case
- parallel: civil engineering criteria (optional)

Afternoon

- parallel: detector layout: separation of HFI and LFI (optional)
- parallel: flexibility analysis
- plenary: wrap up and next steps

Preparatory actions for Amsterdam meeting + a.o.b.

- Preparatory work
 - Incorporate clean room sizes update on detector layout
 - Preliminary version of optical layout for separated HFI & LFI
 - Preliminary concept for double cavern
 - Update civil engineering criteria
 - Progress on system decomposition for requirements management
 - Conclude first cycle of noise budget & science case
- Additional online meetings this week
 - Civil engineering - 10/3
 - System decomposition & requirements management - 11/3
 - Suspensions TRL - 11/3
 - Science case & noise budget - 11/3
 - Risk and flexibility - 12/3
 - Double cavern - TBD
 - Table of asynchronous task force meetings in preparation
- Exchanges with sessions chairs to have topics/agendas prepared
- **No weekly meeting on 17/3**
 - As many people will be traveling to Amsterdam
- Registration for Amsterdam meeting is over
 - 22÷23 people attending in person
- 3rd in-person meeting
 - best option is May 5÷7
 - Meeting location will be at CERN
 - Details to follow soon