

Photo-sensor parallel session

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@ Open Hyper-K meeting

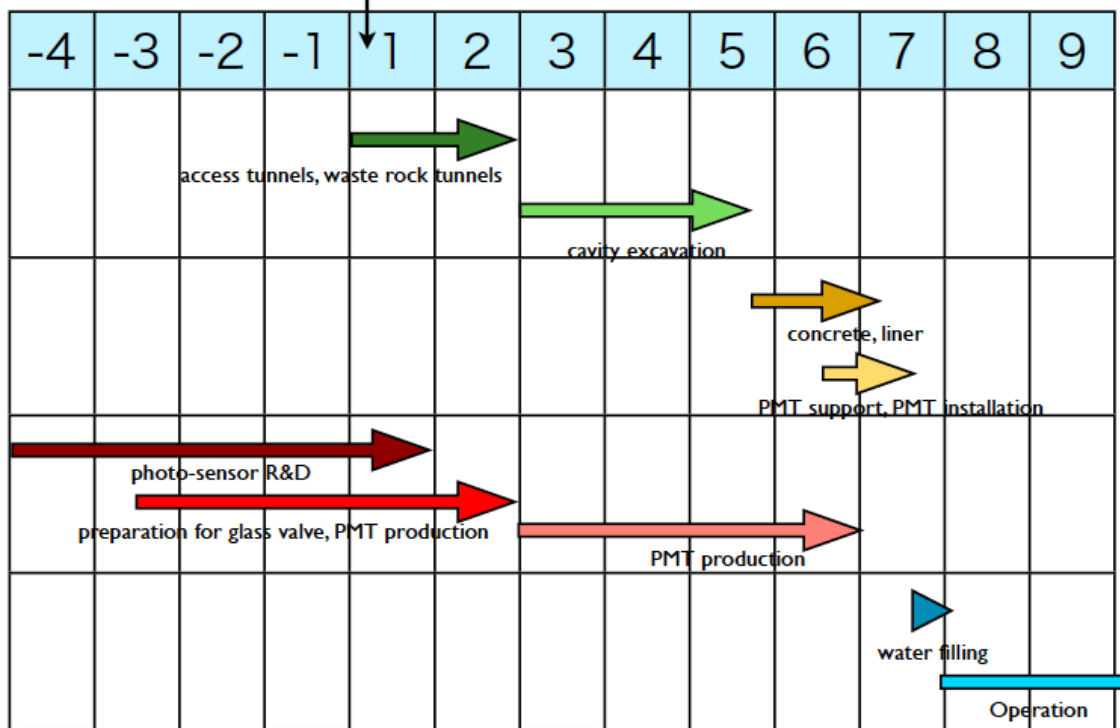
□ 16 participants

- Nakayama, Nishimura, Nakaya, Yokoyama, Iijima, Kudenko, Smy, Fabrice, Konaka, Ikeda, Ling, Huang, Hirota, Kametani, Haga, Suda

Schedule

Schedule

Construction start



2018~

- Photo-sensor mass production

2016~

- Final tests (including long-term stability) of the developed sensor



by late 2015

- most of R&D should be finished

3 years from now

2012

2015

2018

assuming budget from 2016

What we have decided

- Will make a mailing list of the WG
 - If you would like to work on the photo-sensor R&D but could not attend the parallel session, please contact me.
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- First, we need to make a list of detailed study items and clarify requirements for the photo-sensor
 - Nishimura and Nakayama will make initial lists
 - Polish the lists among the WG

- Will have regular meetings
 - to exchange information
 - once/month ?

Free discussion

- International collaboration
 - If we would like to use the foreign facilities, we should contact.
- Concern about higher dark noise rate
- R&D of the electronics for HPD (amplifier, HV) is important
- Can we rely on HPD?
 - also considering 20" PMT (box-line)
- EGADs tank not only for HPD R&D?
 - other photo-sensor / light collectors
- Photon absorption option other than black sheet

Supplement

Study item list (not all ...)

- Electrical characterization
 - basic performance / uniformity / effect by magnetic field
- HPD Electronics R&D : HV module, Amplifier module
- Hyper-K simulation study for selecting photo-sensor

- Light collection options characterization
- Hyper-K simulation study for selecting (or discarding) light collectors

- Mechanical testing (implosion test) of candidate tubes for Hyper-K
- Housing R&D

- Valve shape optimization
- Glass composition

Various options

□ Choice of photo-sensors

- HPD, PMT (box+line), PMT (conventional), Fast-phosphor, ...
- Size: $\sim 10''$, $\sim 20''$, ...
- High QE / Standard QE

□ Choice of light collection options

- None, WLS film, WLS sheet, Winston cone, ...

□ Choice of housing (or other ideas to avoid chain reaction)

Determined based on detector performance and cost

→ Will need detector simulation based on measurements

Near future plan (tube development)

□ Japan

- Start testing of 8" inch HAMAMATSU HPD in EGADS in early 2013.
- First 20" HAMAMATSU HPD prototype in 2013 ?

- R&D of photo-sensor with a fast phosphor
 - Readout by MPPC, Optimization of phosphor material (timescale?)

□ US

- publish results for 12-inch PMT characterization
- make >10 new High QE 11-inch ETL PMT's (takes ~15months)

Parallel Discussion Session (tomorrow evening)

- Each sub-WWG is supposed to
 - identify interested members, and nominate conveners if possible
 - discuss plan/milestones of the sub-working-group
- Let's make a group member list (please signup on the paper)
- Self-introduction (?)