Subject: TIC meeting 11/6 , 2023 (photosensors for Cherenkov subsystems and risk mitigation) - main outcome
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Dear Colleagues,

the meeting has been characterized by rich information, very well presented by speakers and lively discussions.

Main findings:

- The single photon detection by SiPMs is continuously consolidated by the progress of the R&D. New outcomes of the thermal annihilation studies have been presented, which indicate the SiPM lifetime about 3 times longer than the already remarkable results of the previous studies. Risk mitigation is pursued via further studies of radiation damage introducing a x10 safety factor, dark count rate mitigation operating at lower temperature (-40 degrees), selecting higher efficiency SiPM sensors by larger SPADs (50 --> 70 microm), improvements of the annealing protocol.

- The timelines for the delivery of the first 5 samples of HRPPS have been presented (Jan-Mar 2024).
A complete table of requests (partially financially supported, partially not) has been presented. At the same time, this table presents the needed ingredients to converge with HRPPD validation. No automatic scanning station will be available in 2024, leaving the validation to limited scan by poor man approaches. A risk is identified in extrapolating from so limited a number of samples to the whole needed set. The availability of 5 samples only will oblige, in 2024, to serialize the basic tests and the overall timelines of the complete exercise require further and more precise timeline elaboration. The mitigation by commercial MCP-PMTS is unclear because of several open questions about (see next point).

- Commercial MCP-PMTs lack of extended dedicated studies within the collaboration, interfacing them with EICROC is an urgent missing exercise. The production timeline is unkown both for Photek and for Photonis. The possibility that Photonis produces units with characteristics different from their standard default is unlikely and, in case, needs to be explored.
The workforce dedicated to commercial MCP-PMT characterization is precious, but too limited.

Also, the availability of samples for the studies is limited to a single unit per producer and this represents a bottleneck for parallel studies. Also, one single piece is only a limited representative
of the characteristic of a larger set.

Action items:

- Have an update about the matter at a TIC meeting before the end of the year.

- Elaborate and present a detailed plan for the characterization and validation of the first 5 HRPPDs samples expected for Jan-Mar 2024; this plan should include realistic manpower;
Alexander Kiselev is identified as the reference colleague for HRPPD;
Alexander has to indicate if the reference forum for
HRPPD matter is within pfRICH meetings or eRD110 meetings.

- The production timeline for a sizeable set of sensors from Photek and from Photonis should be understood and documented. The planned studies on commercial MCP-PMTs should be documented more in detail and the dedicated workforce (at the moment only Edinburgh)
should increase. The hpDIRC groups are identified as the reference community for the commercial MCT-PMTs.

At the meeting, we also had:

- a presentation by PM about "alternative tracking layout and what if - timing" to further disseminate the tracking mitigation plane in response to the outcome of the Director Review, last October;

- some communications, where the following one has to be recalled:
the barrel HCAL DSC no longer has John Lajoie as the DSL;
there are two new people who will serve as Co-DSL's:
Megan Connors (GSU; mconnnors@gsu.edu) and
Stefan Bathe (Baruch; stefan.bathe@baruch.cuny.edu).

As usual, if this notes need corrections/integration, please, write me back.

Best greetings, Silvia

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