Radiation Monitor Minutes, 26/11/13

Present: Melissa, Pierrick, Chis, Jaroslaw and Norbert.

1. **Agenda:**
   1. Quick review of minutes from last week - Melissa
   2. Summary of IC sub-meeting/Detectors - Melissa
   3. Design discussion – Norbert.
   4. Update on using MAUS to determine beam characteristics and detector simulation - Chris
   5. Action Items – Melissa
   6. Timeline. - Melissa and All
   7. Future meetings
   8. AOB

Minutes:

1. All Okay

2. Levels of radiation that area dangerous to tracker? According to Tracker Paper 0.16 nA, as far as we know this figure stands.
   We considered using the radiation monitor to give additional information to the general/tracker analysis. Sounds feasible determine method.
   We definitely think that the monitors should also work when shield is open and control shield shutting.
   Would be great if we could monitor RF gradient, 50 micro sec rise time, e field as a func of gradient.
   Detectors???
   Analysis/Physics/Simulation tasks broken down:

- Is beam symmetric?
  - Simulate the effect of 1 very off centre emitter with varying amplification. Do this at 0.5, 1, 1.5m away from monitor.
  - Look at effect of wedge absorber.
- Particle rate with no absorber
- How to put a user defined beam into MAUS
- Are there enough G4 physics libraries to include super low E electrons and X rays?
- Determine nominal beam spectrum with max RF
  - Energy spectrum
  - rates
  - spacial distribution

3. No progress, awaiting physics results. Norbert et al have limited availability to this project. Norbert has spoken with Dave Bogg Daresbury detector expert we should work directly with them and ensure man power is put to good use.

4. MAUS is a big beast and progress is ongoing. Made a radmon branch in mc, a design for the radiation monitor in MAUS. Looking at using outputs from previous RF work as input to MAUS, ie input to MAUS MC the RF as beam. He is currently implementing dark current simulations looking at simple beam. Hopefully will be able to propagate a full RF beam in a couple of weeks. In more than a few weeks X rays will be considered. Time to run GEANT 4 is very high and should be considered. Getting there.

5. Actions from last week

See below

1. Make webpage for meetings – **Melissa**
   Done
2. Book a breakout session during collab meeting – **Melissa**
   Yes
3. Add new pictures to documentation – **Melissa**
   Done v10
4. Consider Germanium detectors what timing resolution do they have, cost, benefits, lead time and vs Silicon detectors **– Norbert**
   T
5. Are dark current RF measurements highly desirable, why and how - **Jaroslaw and Melissa**
   YES hard for Chris to look at rise times in RF geometry-simulation. Sensitivity to RF filling time is not necessarily necessary or possible.
6. Determine timeline for work based on answer to action item 4. **– Melissa**
   Done see webpage
7. costings on vacuum feedthroughs, preamps, connectors etc. **– Norbert**
   In progress
8. Add item 7 to document **– Melissa**
   Carries over
9. Testing method for pre-amps in field – **all at face to face**
   Pending the outcome of detector discussions.
10. Start thinking about possible interlock triggers, radiation levels monitoring etc. Elaborate on bullet but no need for a real plan yet. **– Melissa**
    Carries over
11. Collate cabling info from 'backs of envelopes', Send to Melissa **– Norbert**
    Carries over
12. Add item 11 to doc. **– Melissa**
    Carries over
13. Determine sensible analysis/simulation action items. **– Chris, Jaroslaw and Melissa**
    Done see item 2 above

End of actions

6. Everyone will look it over and discussion will take place at the next meeting.

7. 10th December 4pm.

8. None.

Action Items:

1. Is beam symmetric? – **Chris**
   - Simulate the effect of 1 very off centre emitter with varying amplification. Do this at 0.5, 1, 1.5m away from monitor.
   - Look at effect of wedge absorber.
2. Particle rate with no absorber– **Chris**
3. How to put a user defined beam into MAUS– **Chris and Melissa Done**
4. Are there enough G4 physics libraries to include super low E electrons and X rays?– **Chris and Melissa Done**
5. Determine nominal beam spectrum with max RF– **Chris**
   - Energy spectrum

    - rates
    - spacial distribution
6. Research detectors – **Melissa**
7. Start thinking about possible interlock triggers, radiation levels monitoring etc. Elaborate on bullet but no need for a real plan yet. **– Melissa**
8. Collate cabling info from 'backs of envelopes', Send to Melissa **– Norbert**
9. Add item 8 to doc. **– Melissa**