Minutes of BGV meeting #27, 12/02/2014

Agenda page: `https://indico.cern.ch/event/301212`

Present: Paolo, Quentin, Plamen, Bernd, Colin, Mariana, Thomas (vidyo)

❖ BGV Chambers Update

- Production
    - A prototype of the window chamber was produced
        * No difficulties found in the process
        * Metrology ongoing
    - The 3$^{\text{rd}}$ Aluminum block will be used for the final BGV chamber
    - The list of the needed additional components and tools is growing rapidly
- Alexandro Loccio sent mail to provide drawings
- Power losses in the gas tank
    - The power loss values have a big spread under different conditions (given in the ECR)
        * What do the worst conditions imply for the other devices?
    - Paolo studied the effect of using forced air cooling
        * For the 3 kW case, it would allow to keep the gas tank below 120 °C
        * The implications of the detector light tight box not discussed yet
    - **Task1 (Paolo, Plamen)**: Check with Giuseppe if there are any temperature constraints

❖ First estimate of the L0 trigger performance

- Trigger scintillators added in the MC simulation geometry
- Estimated the fractions/rates of signal and background events
    - A realistic pressure profile (from Giuseppe) was used for the rates
    - Total beam current a bit conservative (2500 b @ 1.5E11)
- Results
    - Total rate: 900 kHz
    - With veto: 600 kHz
    - With veto and threshold: 500 kHz
    - Rate of good events
        * $N_{\text{Tr}} > 5$: 85 kHz
        * $N_{\text{Tr}} > 7$: 55 kHz
        * $N_{\text{Tr}} > 10$: 25 kHz
    - **Task2 (Quentin, Plamen)**: Compare with previous ToyMC results (F_{good})
- The performance is as good as expected/aimed-for
  $\Rightarrow$ freeze the design with these geometry and longitudinal positions

- Can we profit from additional scintillators at the exit window (out of the acceptance!)?
  - We could monitor the amount of secondary particles in events occurring in the gas tank
  - Probably not so useful (still, to be checked!), as there is a correlation between number of primaries and secondaries (shown in a talk of Quentin in BGV #24)

❖ Digitization status and plans

- First steps towards creating clusters in the MC simulation
  - Closely related to the way the raw data is formatted
- The aim is to stick as close as possible to the Velo implementation
  - **Task3 (Plamen)**: Discuss with Guido any possible differences in the TELL1 algorithms and output
- Can use the LHCb SciFi implementation of the effects in the "energy deposit → ADC" transformation

❖ AOB

- Info from Thomas (Aachen)
  - First prototype module sent to EPFL
  - Currently finishing the other 2 prototype modules
  - Next: production of the final 5-layer modules (for the far station)
- Valdir Salustino Guimaraes has joined the BGV team and will work with Massi and other LHCb members on the HLT implementation
- The ECR approval procedure to be finalized
  - Clarifying the integration layout corresponding to the last installation phase
- One slot in a VME crate needed for the L0Trigger DAQ
- **Task4 (Plamen)**: Contact Survey about the floor marking
  - Discuss the effect of the tunnel inclination on the BGV positioning and installation
- **Task5 (Bernd)**: Define plots to be displayed in the control room
- **Next BGV meeting**
  - Wed 26/02/2014 (10:30-12:30)
  - Location: 874-1-011

Task List:

Task1 (Paolo, Plamen): Check with Giuseppe if there are any temperature constraints

Task2 (Quentin, Plamen): Compare with previous ToyMC results (F_{good})

Task3 (Plamen): Discuss with Guido any possible differences in the TELL1 algorithms and output

Task4 (Plamen): Contact Survey about the floor marking

Task5 (Bernd): Define plots to be displayed in the control room