

## UA9 Simulations Meeting, 29 April 2009

Participants: Gianluca Cavoto, Emanuele Laface, Roberto Losito, Thomas Markiewicz, Robert Noble, Stephen Peggs, Guillaume Robert-Demolaize, Walter Scandale, Andrei Seryi, Marco Silari, George Smirnov, James Spencer

W. Scandale briefly goes through the introductory slides he prepared. He reminds that there is a family of octupoles which can be used to filament the beam. The aim is to use the crystals both in the channelling mode and in the volume reflection mode.

Three main priorities are identified for the simulations: 1) beam loss map comparing amorphous and strip crystals (including the momentum loss, which will create specific losses in the dispersion suppressor), 2) profile of impact parameter (in the experiment an appropriate duration for the set-up of the Si strip detectors should be taken into account), 3) collimation efficiency (what is intercepted by the secondary with respect to what is lost from the circulating beam). The simulations can also study how to use the Cherenkov detectors to determine the profile. If UA9 will determine successfully these three observables, it will be a good achievement for the 2009 experimental program. These three issues can be further developed in future meetings. Specifically needed are 6-D single-turn maps from various locations, e.g. front face of Cherenkov detector associated with Si crystal and second Cherenkov detector, assuming the preceding elements have zero thickness. Likewise for the nuclear effects study, maps are needed from first Cherenkov detector, front face of Si and exit of Si to the downstream scintillators. Initially the maps can be first order with higher order forms added later. Emanuele Laface is presenting a paper at PAC on his latest simulation results.

The characteristics of the Medipix detector (resolution 2-3  $\mu\text{m}$ , Medipix is a planar detector and for the time being it does not provide angular information), to be inserted in the roman pot towards the wall is documented. R. Losito or M. Silari will circulate the information. Information on Medipix can be found at the following links:

<http://medipix.web.cern.ch/MEDIPIX/>

<http://www.utef.cvut.cz/en/index.php?Ns=103&id=1000038>

The final layout of the detectors in UA9 should be ready by 25 May. Another full day (24 hours) of setting-up at the end of June is also allocated.

R. Noble shows and comments his slide on the Crystal-Particle Interactions group. W. Scandale mentions that point 4 (VR radiation studies for  $e^+$ ,  $e^-$ ) is important for the UA9 tests in the North Area, for which this year we have several weeks of beam time allocated. A further point to be added to this list is investigation of radiation effects, i.e. radiation damage in the crystal and its support, to be tackled in a CERN – SLAC collaboration.

G. Cavoto mentions that he is working with E. Laface on the simulation of filamentation induced by octupoles. He will present his results at one of the next meetings.

It has been decided to set-up a web site (e.g, Indico at CERN, Fermilab or SLAC) where to store all information related to the simulations group, minutes and slides, as well as a mailing list for circulating information.

A small group composed by G. Cavoto, R. Noble, M. Silari, will decide on the best way to store the information.

W. Scandale suggested writing specifications, which will become simulation procedures. The WG will give priorities to the identified tasks and assign them to a given subWG. At the next meeting, WG leaders should briefly summarize the calculations their groups are doing and planning in support of the three main priorities.

The present working groups are:

1. Particle Tracking: Cavoto (lead), Robert-Demolaize, Drees, Peggs, Laface, Scandale, Gilardoni, Hasan
2. Loss Evaluations: Previtali (lead)
3. Crystal-Particle Interactions: Noble (lead), Spencer, Seryi, Stupakov, Taratin, Smirnov, Silari, collaborators Ellison (UNM), Yazynin (IHEP)