« Electron » meeting 10/06/2009

Participants: G. Brunetti, A. Zghiche, J. Favier, G. Lutter, F. Meisel, F. Juget

- Frank presented new features he included in the EM shower reconstruction algorithm, called "TC alg". The new idea is to add to the usual algorithm additional BT from reconstructed tracks inside the shower. He did not present the details of the "TC alg" but only the results which show an improvement of BT collection of ~25% with a shower purity of 90% (instead of 95%).
  The "TC alg" will be used to re-estimate the electron ID and energy measurement and if it is proven to be better it will be committed as the standard algo.
  Test of "Giustino algorithm": is good for zero angle but not for tracks with some angle specially when compared to the new "TC alg". Some additional tests will be made to finalize.
- Frank started a work an electron/gamma separation. This is important when the gamma decay into the same lead plate as the neutrino interaction occurred. Using the shape of the shower, he obtained a good separation (~80%) depending also on the length of the shower.

  All these new algorithms will be finalized and applied to nue, tau → e, and real data.

- Amina presented the work made with her student F. Brunet, mainly the calculation of the events rates of numu → nue, nue beam at the generation level. She showed also the calculation of kinematical variables (Pt, Evis, Ee). This work is close to what was done by Giulia, then they have to agree together on how to go on in an optimized way this work.

- Jean said few words about GENIMA status. He is in touch with Cristiano to improve it. Frederic said he is interested to use GENIMA to compare with real data in order to "validate" the electron work which is mainly based on MC data.

- Test beam at CERN 1rst week of August (proposal):
  - Electron enriched Pion beam
    - 1 brick 4 GeV with e ~5% ⇒ 50 electrons/cm2
    - 1 brick 1 GeV with e ~10-20% ⇒ 100-200 electrons/cm2
    - (1 brick 3 GeV 200 mrad with e ~5% ⇒ 50 electrons/cm2)

- Nue in real data (2008 run). We didn't observe any nue interaction in the current data we have, this must be investigate better. Two ideas were proposed by Dario
  - use ED to select some nue samples, but some works made by Nathalie and Cecile in Strasbourg show that it is not really possible to select such events due to pi0 (gamma) contamination. Only QE event can be selected.
  - Use CS tagging of known showers in numu events to see how we go to the vertex and understand the efficiency. Frederic will start the work and provide some data.

- Discussion:
    - We agreed to have a common set of data that we have all to use. Frederic will see with Elisabetta the status of the production and ask her to provide the data.
    - Nue events in real data. This is very important to investigate properly and we agreed to have a sub-group to work on this. This should be done in agreement with Dario. Amina and Frederic agreed to be in the group, other people are welcome…
    - Finally, we have to start the work on tau →e efficiency estimation as well as for numu → nue.
    - Amina will set up a hyper-news page where we could exchange message, questions, ideas…