Discussion Session -Minutes -

The following questions were asked in order to evoke a discussion between the participants:

Can we standardize
- measurement procedures ?
- test structures ?
- irradiation procedures ?
- annealing procedures ?

Iris:
What counts in the end is the signal to noise ratio in your specific experimental environment with your specific type of detector. This has to be tested before the implementation of the full detector as close as possible to realistic situations. To only perform standardized tests could hinder the development of optimized solutions.

Renate/Jonas:
The radiation environments in the different experiments are not too different. Thus standardization should be done where it can be done in order to allow for comparisons between different experiments. The success we had in the field of radiation damage had not been possible without the standardizations we already use, like the fluence normalization to 1 MeV neutrons. This is only one example that shows that standardizations are useful, at least up to a certain level..

Alberto:
It is astonishing that the uncertainties of "standard silicon" as presented in the talk of Michael and investigated by ROSE are not leading to the formation of another research collaboration dealing with this topic. Especially in the few of future detector projects this is for sure necessary. Are such R&D projects foreseen at CERN?

Christian/Tapio:
The discussion about future R&D projects working on the development of new and/or radiation harder detector concepts is presently oing on in the CERN management. However, for the moment such activities are not foreseen and therefore a reanimation of R&D projects is not expected before the end of this year.

Luciano:
It is not possible to put standard diodes on all wafers. A strict standardization is not possible since it takes the freedom for producing something new.

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Iris:
A compilation of recommended test structures should be made available on a www-page of an institution like the former ROSE collaboration or a detector support group at e.g. CERN. In this case the experiments could decide whether they want to use the structures or not.

Wolfram:
Besides a compilation of recommended test structures a compilation of recommended measurement techniques and measurement procedures should be included in such a database.

Iris:
The measurement procedure for most detectors could be "standardized".

Alexander:
The workshop is a big success since it brought together people from different experiments and even more from experiments in different phases of the production of a silicon detector. It was a good platform to exchange problems and experiences and was for sure helpful. It should be repeated.

Erik:
The experiments should not only state that this workshop was helpful to them but they should also take some action. They should make their mind up whether they want further meetings like this one in order to exchange knowledge and experiences between the experiments. This kind of meeting is not restricted to silicon detector quality assurance topics but could also be useful to other subdetector components of experiments. If they think it is useful they have to ask the management for the implementation of regular workshops.

Will we have a further workshop ?

All participants agreed that the workshop was useful. Thus, a further workshop should be arranged. However, it should earliest take place in 1-2 years when he LHC-experiments can report about their success and problems about implementing quality assurance and quality control in their detector construction process.

Further comments:

Paolo
This workshop was announced as a workshop on quality assurance issues in silicon detectors. However, the terms of QA, QC and QM were often used improperly. This will lead to confusions when you communicate with experts in this field.