

## Summary of Recommendations

### 25<sup>th</sup> LNF Scientific Committee Meeting (November 2002)

The Committee has heard with satisfaction the report on the performance of DAΦNE in the previous six months. The machine group has succeeded to provide the expected 300 pb<sup>-1</sup> to KLOE, with very good background conditions, thanks to a high reliability of the accelerator, even if the luminosity has reached 0.8 10<sup>32</sup> and not 1.0 10<sup>32</sup> cm<sup>-2</sup>s<sup>-1</sup> as hoped. With the data already collected and those that will be collected with the next 500 pb<sup>-1</sup> the Collaboration will complete the first phase of the experiment aimed at the study of radiative decays.

The Committee also wants to congratulate the machine group for the splendid work done for DEAR, allowing this experiment to collect the required data on Nitrogen, reaching a 10% precision, and to show the presence of the expected lines, at the three sigma level, also in Hydrogen with a luminosity of 20 pb<sup>-1</sup>. This has been possible thanks to a spectacular reduction of the background in the DEAR interaction region.

The Committee has also taken note with pleasure that the FINUDA experiment is now ready for installation on the beams, after all tests on the detectors and on the magnet, and that all plans of rolling in are designed with a reasonable time contingency.

The short-term programme for the next months foresees to run DEAR until the end of the year, reaching in this way the requested luminosity of 60-80 pb<sup>-1</sup>, which should be sufficient to complete the first measurement on Hydrogen, at the level of 10%. After this period, improved measurements on Hydrogen and a new measurement on Deuterium will be considered when a triggerable low energy x-ray detector will be developed. At Christmas DAΦNE will be shutdown until April 2003, to allow the complete refurbishment of the interaction region of KLOE and the roll out of DEAR and the roll in of FINUDA.

On a longer time span, after the shut down, the machine will restart in May with FINUDA, allowing the collaboration to run in the experiment and to collect a first bunch of data that could be of 200-300 pb<sup>-1</sup>. After this period DAΦNE will go back to KLOE trying to provide an integrated luminosity of 1 fb<sup>-1</sup>, in a single shot, even if this would mean to run till February 2004. Such a result should be possible if the modifications planned on the interaction region will produce the expected jump to the nominal luminosity of 2.0 10<sup>32</sup> cm<sup>-2</sup>s<sup>-1</sup>. This part of the programme will be in any case reviewed again by the Committee in its spring meeting. The Committee would be happy if during 2003 a common assessment of the medium and long-term future of the programme could be reached among the collaboration, the machine division, the management of the Laboratory and the Committee itself.

The Committee wants to congratulate the staff of the Laboratory for the fast set up of the three lines of synchrotron light. The quality of the beams is such as to attract a lot of interest from the users, which is a guarantee of very positive perspectives in the future years.

It has taken note with interest of the increasing involvement of the Laboratory in R&D studies of new accelerators: first of all, the realization of a High Brilliance electron injector (SPARC) of 150 MeV, for which R&D funds have already been allocated by the government. The Laboratory, with INFN funds is now refurbishing the LISA tunnel to host the above mentioned accelerator, with a goal of attaining an emittance of 10<sup>-6</sup> m.sr and a peak current of 2.5 KA; secondly, the activity towards the CLIC Test Facility, for which the Italian contribution has been defined and signed with CERN; third, the Laboratory has agreed to participate in the design of the hadron accelerator needed for the TERA oncological project.

Finally the Committee has listened with a lot of interest to the tantalizing results on the search of gravitational waves by means of the two antennas NAUTILUS and EXPLORER located at the Laboratory and at CERN in coincidence. It wants to congratulate the experimental teams for the long time overlap of the active periods of the two antennas and eagerly waits for the results of 2003, in particular if also the third antenna, AURIGA in Legnaro, will be put in coincidence.