Conclusions

In this document the status of the $N^{O}E$ project has been discussed. This is the result of efforts done in the last year by the present collaboration for the design of a long baseline neutrino oscillation experiment on a neutrino beam from CERN to Gran Sasso Labs. Experiments in this field may represent a big joint venture between the European Centre of Nuclear Research (CERN) and the Italian National Institute of Nuclear Research (INFN).

Concerning the atmospheric neutrino studies the $N^{O}E$ experiment could be a complementary calorimetric approach to the Superkamiokande water Cherenkov detector.

The design of the apparatus makes likely its use for other physics items, in particular neutrino astronomy, nucleon decay and muon physics, where the high granularity of the active part of detector might compensate the smaller dimensions with respect to existing detectors.

The extreme modularity of the $N^{O}E$ design allows to assemble the detector, including the electronic read-out, outside the tunnel, greatly improving the construction efficiency. Being the calorimetric element (BCE) the basic cell of the detector, parallel assembly line can reduce the time of construction: $2 \div 3$ years appear to be a reasonable estimate.

The intrinsic granularity of the proposed detector is very high: the average distance of the fibers inside the absorber is of the order of 3 mm. At present such a granularity is limited only by the cost of read out electronics. Anyway scintillating fibers seem to be a promising and proven technology for such a massive detector.

The solutions proposed for the read out should guarantee a good event topology reconstruction making possible the recognition of the events.

It is also clear that the major cost of the detector is the active part, so further efforts in balancing cost and performances are needed. Simulations, prototype test and cost evaluation must be done in the next 1-2 years before freezing the design.

The experiment does not require particular safety conditions. Due to the compact dimensions (41 m length) it can be located in any of the present underground experimental hall of the Gran Sasso Laboratories.

Finally the collaborators listed in the first pages are the nucleus strongly working on the feasibility of the project. Behind those names there are Universities and INFN Institutions interested in this field of research. Moreover people involved hope to enlarge the collaboration including foreign Institu-

tions, according to the need to have an international effort to put a fundamental milestone in this intriguing and appealing physics issue.