



NuInt04:

**The Third International Workshop
on Neutrino-Nucleus Interactions
in the Few GeV Region**

Gran Sasso Laboratory - ITALY - March, 17th - 21st 2004

Bulletin N. 1 – December 2003

1. General Information

NuInt04, the third International Workshop on neutrino-nucleus Interactions in the few GeV region, will be held at the INFN Laboratori Nazionali del Gran Sasso (LNGS), Assergi Italy, from Wednesday March 17th to Sunday March 21st, 2004.

The Workshop is supported and organized jointly by INFN (Italy), NSF (US), JSPS (Japan). Information about the conference is available on the conference website:

<http://nuint04.lngs.infn.it/>

2. Scientific Program

After the discovery of muon-neutrino oscillations in the atmospheric neutrino sector by Super-Kamiokande several Neutrino experiments, now running or under construction including K2K, MiniBOONE, MINOS, ICARUS and OPERA, are designed to confirm and to elucidate the neutrino oscillations phenomenon and to provide more precise measurement of the oscillations parameters.

As the experiments collect more data, the contribution of systematic errors becomes more significant in the oscillation analysis. Important sources of systematic errors are the uncertainty in the neutrino-nucleus cross-sections and the subsequent nuclear effects in the few GeV energy region such as Pauli blocking, nucleon binding, pion absorption, nuclear correlations, and final-state interactions.

A precise knowledge of neutrino-nucleus interactions in the few GeV region will also be of vital importance in the future neutrino oscillation experiments at JHF-Kamioka, Fermilab/MINOS and CNGS, as well as future atmospheric neutrino experiments and next generation proton-decay experiments.

By examining our knowledge of this subject, it was clearly shown where theoretical and experimental expertise is needed.

A large Community, of nuclear and high-energy physicists has been formed, as a consequence of the successful first and second Edition of the *NuInt Workshop*, in order to meet the many challenges in current neutrino physics. An additional important benefit of this effort was the establishment of a new field of nuclear physics using neutrino beams as well as electron beams for precise measurements of lepton-nucleus interactions. The purpose of the forthcoming Third Edition of the Workshop (*NuINT04 at LNGS*) is to strengthen this community, focusing the international effort to the problem.

Therefore, the topics of *NuINT04 at LNGS* will include the following subjects:

- Neutrino-nucleus interactions, and their relation to neutrino oscillations, proton decay studies and astrophysics.
- Review of electron-nucleus interactions and neutrino-nucleus interactions
- Theoretical review of intermediate energy neutrino-nucleon interactions and nuclear effects
- Future experiments for precise neutrino-nucleus interactions
- Comparison of neutrino event generators

3. Preliminary conference schedule

Wednesday	March 17	Registration	
		Session I	Motivations
Thursday	March 18	Sessions II	Current Experiments and Re-Analysis
		Session III	e-N Scattering
Friday	March 19	Sessions IV	$\bar{\nu}$ -N Scattering
		Free Session	Discussion , Visit to LNGS Underground
Saturday	March 20	Sessions V	Nuclear effects in el.weak interactions
		Session VI	Simulations and MC Generators
		Session VII	Future Detectors
Sunday	March 21	Sessions VIII	Summary of the Workshop and closing

A more detailed program will be posted on the conference website as soon as it becomes available and will be included in *Bulletin N.2*.

4. Abstracts, Transparencies and Proceedings

The Abstracts of the talks included in the program will be posted on the web page before the start of the Workshop to allow preliminary survey of the arguments and fruitful discussions during the Sessions.

Copies of the transparencies of all talks will also be available on the conference

website.

Proceedings of the Workshop will be published as a separate volume of **Nuclear Physics B** (Proceedings Supplement).

5. Registration

Registration can be done by filling the form available on the website.

Registration Fee: 150 Euros

The fee covers the conference materials, a copy of the proceedings, transportation from/to the Rome Airport (limited at the start and at the end of the Workshop), lunch tickets for the LNGS restaurant, refreshments during the session breaks and social dinner.

To allow an efficient organization of the Workshop, participants are kindly recommended to register not later than February 28th.

6. Travel arrangements

Except for visitors from European countries (EEC) a valid passport is required to enter in Italy. Please check with the closest Italian Embassy or consulate whether or not a visa is required.

Transportation:

the Gran Sasso Laboratory is located in Assergi, a small village about 15 km from L'Aquila, the main town of the region. The town of L'Aquila is located 100 Km east of Rome in the Appenine Mountain, just below the Gran Sasso peak (2914m). The nearest airport is Rome-Fiumicino.

Transportation from Rome-Fiumicino to GranSasso Lab for the NuInt04 Participants will be organized with dedicated shuttle service, in coincidence with arrival of flights (mainly from Japan and US) on March 16th (late evening) and on March 17th (early morning).

Detailed information about the shuttle service will be circulated at later stage.

Other information is available on the website.

7. Accommodation

A block of rooms are being booked at some hotels nearby the GranSasso Lab. The list of these hotels, types of accommodation and price will be soon available on the website. Participants are kindly invited to:

- choose the hotel
- confirm the reservation by fax directly to the hotel, specifying to be "*NuInt04 participant*" and the period of stay.
- inform by email the NuInt04 Secretariat about the hotel reservation (to allow local cross-check).

8. Further Information

Further information will be circulated in the *Bulletin N.2* (by end of January 2004).
The Workshop web page will also be progressively updated as information becomes available.

For any question or special request about the local organization, please contact the Workshop Secretariat:

NuInt04 Secretariat

Mr. Fausto Chiarizia

[mailto: fausto.chiarizia@lngs.infn.it](mailto:fausto.chiarizia@lngs.infn.it)

Co-chairs of NuInt04 Organizing Committee

[Flavio Cavanna](#) (univ. of L'Aquila - Italy)
(- US)

[Makoto Sakuda](#) (KEK - Japan)