LNL TANDEM-ALPI NEWSLETTER N^0 15, October 1998
Laboratori Nazionali di Legnaro, Via Romea 4, I-35020 Legnaro, Italy

Calendar

November 10, 1998	**Deadline for new proposals** (for the period January-July 1998)
December 14-15, 1998 (provisional date)	PAC meeting

The Tandem-ALPI accelerator

The laddertron L98-2 assembled with the best, super selected, second hand material available in March 1998 has been running since beginning of April quite well. In fact, it was foreseen to install a completely new laddertron in May 1998 but it was decided, following also the advise of european experts on Tandem accelerators, to continue to use the old one by increasing slowly the terminal voltage up to 15 MV. In the first period, when the terminal voltage was kept below 14 MV, the ALPI postaccelerator has been used for those experiments requiring higher energies.
Because of the problems occurred at the Tandem the ALPI linac has been running quite often without any major problems, with beams ranging from ^{28}Si to ^{74}Ge.

The list of experiments completed in the period April 26-July 30 1998 is given in Table 1.

Table 1 – Experiments performed at the Tandem-ALPI accelerator in the period April 26-July 30, 1998.

a) Euroball experiments

97.07 Fission decay of exotic shapes in actinide nuclei.
P.A. Butler (Liverpool)

97.39 Search for hyperdeformation in nuclei around ^{152}Dy with the ^{37}Cl+^{120}Sn reaction.
G. Viesti (Padova)

97.68 Search for coexistence of highly and superdeformed shapes in ^{142}Gd.
R.M. Lieder (Julich)

97.89 Search for hyperdeformation in $^{168-170}$Hf by use of the very cold near symmetric reaction ^{76}Ge+^{96}Zr$\rightarrow$^{172}Hf.
B. Herskind (NBI)

97.92 Investigation of SD states in ^{236}U populated by a transfer reaction.
Th. Kroell (Padova)

97.102 Fission induced by heavy-ions: pairing correlations in highly-deformed neutron-rich A≈100 nuclei.
M.G. Porquet (Orsay)

97.103 The intensity distribution of primary SD decay-out lines in ^{194}Pb.
A. Lopez-Maertens (Strasbourg)

97.106 In beam spectroscopy near the neutron drip line.
D. R. Page (Liverpool)

98.01 The investigation of SD states and their population in nuclei around ^{82}Sr.
P.J. Dagnall (Manchester)
J.F. Chemin (Bordeaux)

98.20 γ–ray studies of the fission of ^{238}U induced by ^{12}C: spectroscopy and fission dynamics.
J. Durell (Manchester)
C. Theisen (Saclay)

98.48 Spectroscopy in the unpaired regime of ^{161,162}Er.
it J. Simpson (Liverpool)

b) Other experiments

96.A11 Emission mechanism of complex fragments in the reaction ^{28}Si+^{92}Mo at 235 MeV incident energy.
A. D'Onofrio (Napoli)

97.70 Pre-scission emission in the decay of ^{209}Bi nuclei: status report of the 8πLP experiment.
G. Prete (LNL)

97.81 Search for proton radioactivity of ^{117}La and ^{173}Au.
F. Soramel (Udine)

98.38 Simultaneous measurement of elastic scattering and fusion in ^{36}S+^{140}Ce..
A. M. Stefanini (LNL)

New Director of the Legnaro National Laboratories.

After serving two three-years terms, starting from November 1, 1992, Prof. Massimo Nigro has left the direction of the Legnaro Laboratories on July 31, 1998. In its meeting of June 1998 the *Consiglio direttivo* of INFN had nominated as new Director of Legnaro Dr. Graziano Fortuna who took his new responsability starting August 1st 1998.

The Legnaro Laboratories as Large Scale Facility of the European Community

The Legnaro Laboratory is recognized by the European Community as Large Scale Facility under the TMR/LSF/RA (i.e. Training and Mobility of Researchers, Large Scale Facilities, Researchers Access) program. Therefore, groups from the European Union and associated states are eligible for financial support, through that program, for carrying out experiments at Legnaro. Users of the Tandem-ALPI accelerator should have a research proposal approved by the Legnaro PAC, in order to get access to funding within the TMR/LSF program. The deadline for the *Call of proposals* related to the

TMR program is **November 10, 1998**, i.e. the same as for the next PAC meeting. Proposals will be evaluated and selected on the basis of scientific merit by a Users Selection Panel.
More information about the TMR/LSF program can be found on the LNL web page *www.lnl.infn.it*

Euroball: a status report.

The Euroball (EB) γ-ray spectrometer has been running in its standard configuration plus ancillary detectors (ISIS, Diamant, PPAC) until July 30, 1998. In August 1998, the forward 1π composed of 30 tapered Ge-detectors has been removed and replaced by the n-wall. The experiments with the n-wall have started on September 11 and are still running at the time of this writing. The Euroball array will be operating in Legnaro until November 15, 1998, when it will be dismounted and moved to Strasbourg where it will resume operation by beginning of April 1999.
Detailed information concerning the array is available on the www at the address:

http://eb07.lnl.infn.it

For those carrying out an EB experiment a voucher is available allowing to rent a car for a week. In order to get the voucher, the spokesperson should contact Mrs. A. Spalla at *spalla@pd.infn.it*.

The GASP array.

With Euroball moved to Strasbourg the GASP spectrometer will be again at disposal of users also in conjunction with the recoil mass spectrometer CAMEL of LNL. The GASP array consists of 40 Compton suppressed, large volume germanium detectors and of a 4π calorimeter composed of 80 BGO crystals. The detector houses a reaction chamber of 34 cm diameter where a charged particles detector array (named ISIS) composed of 40 ΔE-E Si-telescopes can be installed (its efficiency for protons is $\approx$ 70%). Evaporation residues produced in the centre of GASP can be injected into the recoil mass spectrometer CAMEL for mass selection. The coupled operation of GASP, CAMEL and the Si-ball gives a powerful instrument for identification and study of weak reaction channels. The absolute photopeak efficiency of GASP at 1332 keV is about 3% but reaches $\approx$ 6% if the BGO inner ball is removed and the 40 Ge detectors are positioned at $\approx$ 20 cm from the target. This second configuration is being used when the detection efficiency, and not the resolving power, is the relevant figure in an experiment. The electronics and data acquisition system of GASP are being improved and updated in order to keep the array in good operation. A neutron detector to be installed in the forward part is also under construction in order to allow the study of very proton-rich nuclei.
The experimental activity with GASP will start around March 1999 in the so called "configuration 1" with the BGO inner ball and ISIS. The reduced number of available Ge detectors (12 are given to Euroball in Strasbourg) could imply a reduction of γ-ray efficiency.
People intending to use the array during 1999 are kindly invited to attend a one day GASP user meeting which will be held in LNL on **October 30, 1998** where the operation of the array in 1999 will be discussed. The announcement of that meeting will be sent soon by e-mail.

The PAC meeting of July 7-8, 1998

In the meeting held on July 7-8, 1998 the PAC has examined the experimental proposals which were submitted in February 1998 (and not discussed in the April PAC meeting because of the uncertainties related with the Tandem machine), plus two new proposals arrived in June 1998. Three of the proposals resubmitted because of bad performances of the accelerator and/or the Euroball array were already approved in the April meeting. In the mean time seven Euroball proposals have been withdrawn because of the change of Euroball configuration foreseen after summer. Furthermore, being GASP not available for experiments before beginning of 1999, five experiments requesting it have also been withdrawn. The proposals taken into consideration by the PAC were then 35 requesting for 186 days of beam-time: 22 of them were Euroball proposals with a beam time request of 118 days.
The proposals approved (20 for a total of 95 days) are listed in Table 2.

Table 2– Proposals accepted by the PAC for the period September-December 1998.

98.02	Spectroscopy of 2^{nd}-well proton emitters in the mass A≈60 region. *D. Rudolph (Lund)*
98.03	Search for proton-neutron pairing in nuclei with mass number A≈70. *F. Dönau (Rossendorf)*
98.07	SIRAD/TOLRAD: Proton and ion induced damage on silicon detectors, electronic devices and systems. *D. Bisello (Padova)*
98.08	Latent track formation induced by high energy ions in HTSC materials and their interaction with flux lines. *E. Mezzetti (Torino)*
98.10	Search for excited states in ^{103}Sn. *C. Fahlander (Lund)* *L. O. Norlin (Stockolm)*
98.12	Neutron pair transfer channels in ^{62}Ni+^{206}Pb. *L. Corradi (LNL)*
98.14	Search for γ-decay of the giant dipole resonance in superdeformed nuclei. *A. Bracco (Milano)*
98.15	High spin studies of nuclei around doubly magic ^{40}Ca. *J. Nyberg (Uppsala)*
98.21	GARFIELD: simultaneous detection and identification of light charged particles and heavy fragments. *F. Gramegna (LNL)*
98.24	Study of the fission process in the system ^{32}S+^{100}Mo at E_{lab}=240 MeV. *G. La Rana (Napoli)*
98.25	Study of the fission dynamics in multinucleon transfer induced in fission of ^{28}Si+^{232}Th reactions at 15 MeV/A. *R. K. Choudhury (Bombay)* *E. Fioretto (LNL)*
98.28	98.28: BRUCONE: a matrix detector system to study Coulomb dissociation of proton rich exotic nuclei. *M. Romoli (Napoli)*

98.29 Investigation of T=0 coupling in the N=Z nuclei ^{62}Ga, ^{66}As and ^{68}Se - a survey of the deformation dependence.
S. Skoda, J. Eberth (Köln)
98.31 Search for γ-ray transitions in hyperdeformed 4N-nuclei with A=36-44.
B. Gebauer (Berlin)
98.33 High spin states in neutron deficient $f_{7/2}$ nuclei.
S.M. Lenzi (Padova)
98.36 Investigation of pairing correlations and collectivity in the N=Z nucleus ^{80}Zr.
P.H. Regan (Surrey)
R. Wadsworth (York)
98.38 Simultaneous measurement of elastic scattering and fusion in ^{36}S+^{140}Ce.
A.M. Stefanini (LNL)
98.45 Superdeformation, shell structure and neutron-proton correlations at A≈90, N≈Z.
B. Cederwall (Stockolm)
O. Skeppstedt (Göteborg)
98.49 Energy calibration of the CsI(Tl) detectors for the Garfield apparatus.
P. F. Mastinu (Trieste)

The Next PAC Meeting

The provisional date for the next PAC meeting is December 14-15, 1998.
The PAC composition will be renewed by INFN soon and the exact date will be fixed as soon as the new PAC will be nominated.
Deadline for the presentation of experimental proposals is November 10, 1998.

Forms for presentation of proposals are mailed in the beginning of October 1998 to those receiving the present newsletter. If you wish to receive the "call for proposals" but you are not in our mailing list, please contact the coordinator of the Tandem-ALPI accelerator (see address below).

Any correspondence related to the use of the Tandem or ALPI linac has to be addressed to the coordinator of the Tandem-ALPI accelerator

Santo Lunardi
e-mail *lunardi@legnaro.infn.it*
lunardi@padova.infn.it

Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Legnaro, Via Romea 4, I-35020 LEGNARO, Italy
Tel: ++39-49-8068311
Telefax: ++39-49-641925
www address: http://www.lnl.infn.it