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I. THE ACCELERATOR

During 2001 the LNL XTU-Tandem accelerator delivered heavy ion beams in the three experimental halls for a total amount of $\simeq 5600$ hours (233 days). 57 days, corresponding to 24 % of the total, were used to inject beams into the ALPI post-accelerator.

^{82}Se beams were successfully accelerated at $E=500$ MeV for two experiments (exp. n.00.26 and 01.14), while a ^{12}C beam was accelerated for the first time through ALPI at 20 MeV/u (exp. USP01.49). The Tandem accelerator worked properly all over the year, delivering heavy-ion beams at terminal voltages up to $\simeq 15$ MV.

II. THE SET-UP'S

In the 1st experimental hall first heavy-ion beams were delivered into the PRISMA magnetic spectrometer up to the focal plane detector. The instrument will be used to perform measurements of multinucleon transfer at Coulomb barrier energies with unprecedented solid angle ($\simeq 80$ msr). Work is also in progress to define the infrastructures to install an array of Ge-detectors, to be used in coupled operation with PRISMA in view of γ -particle coincidence experiments.

The set-up for applied physics placed in the +70⁰ position continued operation with various heavy-ion beams and covered a relevant fraction of the total available machine time.

The SERPE set-up for γ -heavy-ion coincidence studies has been reinstalled on the +10⁰ beam line and restarted data taking.

In the 2nd experimental hall, the four existing set-up's, namely GASP, RMS, PISOLO, $8\pi\text{LP}$, continued operation in normal conditions. As usual, the γ -array GASP, together with the ISIS apparatus for charged particle detection and the new neutron detector array, covered the largest fraction of total beam-time. A new set-up for the production and transport of francium (and other alkalines) ions into a magneto-optical trap is in an advanced status of construction. The primary beam-line has been already tested and the secondary beam-line is being mounted. The concrete shieldings for the beam and for the trap are completed and the trap is ready to be mounted inside the laser area.

In the 3rd experimental hall, the Bari neutron-ball, the HECTOR BaF₂ detector array and the GARFIELD apparatus for charged particle detection, continued data taking.

III. THE EXPERIMENTS

The total number of experiments completed during 2001 was 37 ; of these, 20 had foreign users as spokespersons with participants coming from $\simeq 30$ institutions from outside Italy.

Beams were accelerated to the different target points with a beam-time percentage listed below.

Set-up	Detector	Hall	% of beam-time
GASP	γ -array	II	43
PISOLO	TOF spectr.	II	13
$8\pi\text{LP}$	4π det.	II	6
RMS	mass spectr.	II	6
TRAPS	atom trap	II	3
HECTOR	BaF ₂ array	III	3
GARFIELD	4π det.	III	1
N-Bari	neutron-array	III	2
PRISMA	magnetic spectr.	I	5
SERPE	γ -p array	I	5
Int. Physics	+30 ⁰ , +60 ⁰ , +70 ⁰	I	11
others	+40 ⁰ , +50 ⁰	I	2

IV. THE PAC

The LNL Program Advisory Committee met twice during 2001 in order to evaluate the experimental proposals presented for the periods April-July 2001 and September 2001-March 2002. For the first (second) meeting, held in February (July), a total of 26 (29) proposals were submitted for experiments at the Tandem-ALPI accelerator, 3 (3) of which concerned applied physics and were evaluated by the User Selection Panel (USP). The total beam-time request for the 1st and 2nd semester was 134 (182) days, the number of approved proposals by the PAC was 12 (18) and the number of assigned days was 65 (110) respectively. The total number of days allotted for interdisciplinary physics was 15 and 20 for the 1st and 2nd semester respectively.