

C18

ENTRY No. ALICE  
NAME OF MACHINE ALICE  
INSTITUTION Institut de Physique Nucleaire  
ADDRESS B.P. no 1 ORSAY FRANCE  
TEL 941 73 04  
IN CHARGE Richomme  
DATE 25 mars 1984  
TELEX  
REPORTED BY Richomme

#### HISTORY AND STATUS

DESIGN, date 1959 Model tests 1958-59  
ENG DESIGN, date 1959-62  
CONSTRUCTION, date 1960-64  
FIRST BEAM, date (or goal) 1965 April  
MAJOR ALTERATIONS Liner injector 1968  
New Beams Area 1972  
COST, ACCELERATOR  $5 \cdot 10^9$  E  
COST, FACILITY, total  $12 \cdot 10^6$  E  
FUNDED BY Ministère de la Recherche Scientifique  
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT  
SCIENTISTS 0 ENGINEERS }  
TECHNICIANS 17 CRAFTS }  
GRAD STUDENTS involved during year  
OPERATED BY Research staff or 8 Operators  
OPERATION 120 hr/wk, On target 100 hr/wk  
TIME DISTR. in house 49 % , Outside 51 %  
BUDGET, op & dev  $0.9 \cdot 10^6$  F  
FUNDED BY IN2P3  
RESEARCH STAFF, not included above  
USERS, in house 38 outside 61  
GRAD STUDENTS involved during year  
RESEARCH BUDGET, In house  $0.7 \cdot 10^6$  F  
FUNDED BY IN2P3-CNRS

#### MAGNET

POLE FACE, diameter (compact) cm, R extraction 80 cm  
R injection 20 cm  
GAP, min 21 cm, Field 18 kG }  
max 47 cm, Field 12.4 kG } at  $0.75 \cdot 10^6$   
AVERAGE FIELD at R ext 15 kG } Ampere turns  
B max/ <B> 1.2  
NUMBER OF SECTORS { compact 3 } Spiral, max deg  
{ separated }  
SECTOR ANGLE (ISSC) 50 deg  
TRIMMING COILS 3

CONDUCTOR, material and type Aluminium  
STORED ENERGY (cryogenic) MJ  
POWER: main coils 490 max, kW ; current stability  $5 \cdot 10^{-5}$   
trimming coils 72 max, kW ; current stability  $5 \cdot 10^{-5}$   
WEIGHT: Fe 260 tons ; coils 20 tons  
COOLING system oil and demineralized water  
ION ENERGY (bending limit) E/A =  $0.75 \cdot q^2/a^2$  MeV/amu  
(focusing limit) E/A =  $q^2/a^2$  MeV/amu

#### ACCELERATION SYSTEM

DEES, number 1 ; angle 180 deg  
BEAM APERTURE 5 cm ; DC Bias 0 kV  
TUNED by, coarse TRIM CAP  
RF 5 to 10.2 MHz, stable  $\pm 7 \cdot 10^{-6}$   
Orb F to MHz  
HARMONICS, RF/Orb F, used 1-3  
DEE - Gnd, max 75 kV, min gap cm  
STABILITY, (pk-pk noise)/(pk RF volt) 0.01  
ENERGY GAIN, max 150 kV/turn  
RF PHASE, stable to  $\pm$  deg  
RF POWER input, max 100 kW  
FREQUENCY MODULATION, rate /s  
modulator, type  
beam pulse, width

#### VACUUM SYSTEM

OPERATING PRESSURE LINAC  $5 \cdot 10^{-7}$  CEV  $10^{-6}$  Torr or mbar  
PUMPS, No, Type, Size 4 diffusion pumps one 80 cm  
three 60 cm TURBO-MOLECULAR PUMPS

#### ION SOURCES

Internal penning and Linac with internal stripping  
in the cyclotron

#### INJECTION SYSTEM

Internal stripping in the cyclotron

#### EXTRACTION SYSTEM

Electrostatic deflector + 2 magnetics channel

#### FACILITIES FOR RESEARCH

SHIELDED AREA, fixed  $290 \cdot m^2$  ; movable  $m^2$   
TARGET STATIONS 9 in 2 rooms  
STATIONS served at same time, max 1  
MAG SPECTROGRAPH, type  $120^\circ$   $n=1/2$   
COMPUTER model IBM 360-70  
OTHER FACILITIES PDP 11/05 and 11/34

#### CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
$^{14}N^{7+}$		210		50 nA
$^{40}Ca^{15}$		400		100 nA
$^{63}Cu^{20}$		450		80 nA
$^{109}Ag^{29+}$		550		3 nA

#### SECONDARY

SINGLE LINEAR  $^{131}Xe^{10-}$  200 nA (part/s)

#### BEAM PROPERTIES

MEASURED	CONDITIONS	
	PULSE WIDTH	PHASE EXC, max
11 RF deg	1 $\mu$ A of MeV ions	
RF deg	$\mu$ A of MeV ions	
EXTRACT eff 45 %	$\mu$ A of MeV ions	
RESOL $\Delta E/E$ 1 %	$\mu$ A of MeV ions	
EMITTANCE		
( $\pi$ mm. mrad) { .42 axial } { 120 rad }	$\mu$ A of MeV ions	

#### OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 64 SOLID STATES PHYSICS  
BIOMEDICAL APPLICAT. 3 ISOTOPE PRODUCTIONS  
Various 23  
Development 10

#### REFERENCES/NOTES

Time is assigned program committee

#### PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS