ENTRY No. 25

NAME OF MACHINE ALICE DATE 25 mars 1984
INSTITUTION Institut de Physique Nucleaire
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IN CHARGE Richomme 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 5.10^6 F
COST, FACILITY, total 12.10^6 F
FUNDED BY Ministère de la Recherche Scientifique

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 0 ENGINEERS 1
TECHNICIANS 17 CRAFTS 7
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 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 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 10^6 Ampere turns
AVERAGE FIELD at R ext 15 kG
B max/ <B> 1,2
NUMBER OF SECTORS compact 3 separated Spiral, max deg
SECTOR ANGLE (SSC) 50 deg
TRIMMING COILS 3
CONDUCTOR, material and type Aluminium
STORED ENERGY (cryogenic) MJ
POWER : main coils 490 max, kW ; current stability 5 10^{-5}
trimming coils 72 max, kW ; current stability 5 10^{-5}
WEIGHT : Fe 260 tons ; coils 20 tons
COOLING system oil and demineralized water
ION ENERGY (bending limit) E/A = 75 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 fine TRIM CAP
RF 5 to 10.2 mHz, stable ± 7 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 ± deg
RF POWER input, max 100 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE LINAC 5. 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 m² ; movable m²
TARGET STATIONS 9 in 2 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type 120° n=1/2
COMPUTER model IBM 360-70
OTHER FACILITIES PDP 11/05 and 11/34

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) 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 (part/s)
SINGLE LINEAR 131Xc10- 200 nA

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH 11. RF deg 1 pμ A of MeV ions
PHASE EXC, max RF deg pμ A of MeV ions
EXTRACT eff 45 % pμ A of MeV ions
RESOL ΔE/E 1 % pμ A of MeV ions
EMITTANCE
(π mm. mrad) {42 axial, 120 rad} pμA 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 comittee

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS