ENTRY No. 3

NAME OF MACHINE AVF-CGR-MeV 520 DATE 9.7.81
INSTITUTION University of Liege - Belgium
ADDRESS Cyclotron Research Center - B30
TEL 32-41-56.16.87 TELEX
IN CHARGE D. LAMOTTE REPORTED BY D. LAMOTTE

HISTORY AND STATUS

DESIGN, date 1972 Model tests 1973
ENG DESIGN, date 1973
CONSTRUCTION, date 1973-1975
FIRST BEAM, date (or goal) 23.3.75
MAJOR ALTERATIONS 1981 : improved tuning panels and dees
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY State and University

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS 1
TECHNICIANS 4 CRAFTS 2
GRAD STUDENTS involved during year
OPERATED BY Research staff or 4 Operators
OPERATION 60 hr/wk, On target 55 hr/wk
TIME DISTR. in house %, Outside %
BUDGET, op & dev
FUNDED BY University

RESEARCH STAFF, not included above

USERS, in house 9 outside 10
GRAD STUDENTS involved during year 3
RESEARCH BUDGET, in house
FUNDED BY IISN - FNRS - FRSM - University

MAGNET

POLE FACE, diameter (compact) 120. cm, R extraction 52,5 cm
R injection cm
GAP, min 8.6. cm, Field 17.5 kG
max 14.0. cm, Field 11.0 kG
AVERAGE FIELD at R ext 14.8 kG
} at 150 x 10^6 Ampere turns
B max/ <B> 1.18.
NUMBER OF SECTORS { compact 4 / separated } Spiral, max 34deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS
CONDUCTOR, material and type Cu
STORED ENERGY (cryogenic) MJ
POWER : main coils 65. max, kW ; current stability
trimming coils 10. max, kW ; current stability
WEIGHT : Fe 28 tons ; coils tons
COOLING system deionized water
ION ENERGY (bending limit) E/A = 29 q^2/a^2 MeV/amu
(focusing limit) E/A = q /a MeV/amu

ACCELERATION SYSTEM

DEES, number 2 ; angle 50 deg
BEAM APERTURE 2.5 cm ; DC Bias kV
TUNED by, coarse s.c. piston fine panel
RF 19.5 to 41 MHz, stable ± 10^{-6}
Orb F 4.9 to 20.5 MHz
HARMONICS, RF/Orb F, used 2 - 3 - 4
DEE - Gnd, max 35 kV, min gap 25 cm
STABILITY, (pk-pk noise)/(pk RF volt) ,002
ENERGY GAIN, max kV/turn
RF PHASE, stable to ± 2 deg
RF POWER input, max 85 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 10^{-6} Torr or mbar
PUMPS, No, Type, Size 2 - diffusion (32001/s)
- primary (60 m^3/h)

ION SOURCES

axial, Livingston - Jones

INJECTION SYSTEM

EXTRACTION SYSTEM

electrostatic deflector, passive corrector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 700 m^2 ; movable - m^2
TARGET STATIONS 8 in 6 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type
COMPUTER model Norsk ND 10S
OTHER FACILITIES Medical unit (Gamma camera, positron tomograph), hot chemistry, biological laboratories

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p	6-20	2,5-24	300	100
d	3-11.5	3-14.5	500	100
^{3}He	6-29	6-32	200	100
^{4}He	6-24	6-29	100	60
SECONDARY			(part/s)	

BEAM PROPERTIES

	MEASURED	CONDITIONS
PULSE WIDTH	RF deg	pμ A of MeV ions
PHASE EXC, max	RF deg	pμ A of MeV ions
EXTRACT eff	50-70. %	30. pμ A of 21. MeV p. ions
RESOL ΔE/E	5. %	pμ A of MeV ions
EMITTANCE		
(π mm. mrad) { 15 axial / 15 rad }		20. pμA of 20. MeV p. ions

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 60 % SOLID STATE PHYSICS 20 %
BIOMEDICAL APPLICAT. 60 % ISOTOPE PRODUCTIONS 20 %

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS