

ENTRY No. 63

NAME OF MACHINE V.V. AVE. CYCLOTRON DATE MAY 1989
INSTITUTION VRIJE UNIVERSITEIT
ADDRESS DE BOELELAAN 1081 1081 HV AMSTERDAM THE NETHERLANDS
TEL 020 - 5484707 FAX 020 - 5482944
IN CHARGE C.HOEKSTRA REPORTED BY C.HOEKSTRA

HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date
FIRST BEAM, date (or goal) APRIL 1965
MAJOR ALTERATIONS

COST, ACCELERATOR

COST, FACILITY, total
FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 1 ENGINEERS 1
TECHNICIANS 6 CRAFTS 4
GRAD STUDENTS involved during year
OPERATED BY Research staff or 10 Operators
OPERATION 136 hr/wk, On target 130 hr/wk
TIME DISTR. in house 80% , Outside 20%
BUDGET, op & dev
FUNDED BY

RESEARCH STAFF, not included above

USERS, in house outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET

POLE FACE, diameter (compact) 70. cm, R extraction .59 cm
R injection .2 cm
GAP, min .15 cm, Field .20 kG
max .27 cm, Field .10 kG at 0.4\* 10^6
AVERAGE FIELD at R ext .14.6 kG } Ampere turns
B max/ <B> .1.3

NUMBER OF SECTORS { compact .3 } Spiral, max 45 deg
{ separated . }
SECTOR ANGLE (SSC) deg
TRIMMING COILS 10 CONCENTRIC

CONDUCTOR, material and type ALU HOLLOW TUBE
STORED ENERGY (cryogenic) MJ
POWER: main coils 130 max, kW ; current stability 10%
trimming coils 30 max, kW ; current stability
WEIGHT: Fe 100 tons ; coils 20 tons
COOLING system WATER
ION ENERGY (bending limit) E/A = .30 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 2.5 cm ; DC Bias 0.3 kV
TUNED by, coarse M.S. fine TRIM CAP
RF 6 to 22 MHz, stable +/- 10%
Orb F 2 to 22 MHz
HARMONICS, RF/Orb F, used 1 ST, 3 RD
DEE - Gnd, max .50 kV, min gap 0.8 cm
STABILITY, (pk-pk noise)/(pk RF volt) 3.10
ENERGY GAIN, max 100 kV/turn
RF PHASE, stable to +/- deg
RF POWER input, max .85 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 2 10^-6 Torr or mbar
PUMPS, No, Type, Size 1 OIL-DIEF . 6000L/SEC.

ION SOURCES

INTERNAL - LIVINGSTON

INJECTION SYSTEM

EXTRACTION SYSTEM

ELECTROSTATIC + MAGN. CH.

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed .437 m^2 ; movable m^2
TARGET STATIONS 5 in 2 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type
COMPUTER model HEADSTART 3
OTHER FACILITIES MICROBEAM, PIXE
ISOTOPE PRODUCTION INT.
GASTARGET

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Rows include P, D, He-3, Alpha, and SECONDARY.

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH .35 RF deg pu A of MeV ions
PHASE EXC, max RF deg pu A of MeV ions
EXTRACT eff 70% pu A of MeV ions
RESOL ΔE/E .0.3% pu A of MeV ions
EMITTANCE { .5 axial } pu A of MeV ions
{ .5 rad }

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 15% SOLID STATES PHYSICS 7%
BIOMEDICAL APPLICAT. 5% ISOTOPE PRODUCTIONS 80%

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS