

ENTRY No. 85

NAME OF MACHINE IM Radial Ridge DATE July 1989
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HISTORY AND STATUS

DESIGN, date 1957 Model tests None
ENG DESIGN, date 1957-63
CONSTRUCTION, date 1958-63
FIRST BEAM, date (or goal) Int. 1963, Ext. 1963
MAJOR ALTERATIONS
COST, ACCELERATOR £ 30 K
COST, FACILITY, total
FUNDED BY SERC/since 1988, self funding
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS ENGINEERS 1
TECHNICIANS 2 CRAFTS 1
GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION hr/wk, On target hr/wk
TIME DISTR. in house 15% K, Outside %
BUDGET, op & dev £ 15 K
FUNDED BY self funded
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) 102 cm, R extraction 46 cm
R injection cm
GAP, min 7 cm, Field 19 kG
max 14.5 cm, Field 13 kG } at
AVERAGE FIELD at R ext 16 kG } Ampere turns
B max/ <B> 1.2
NUMBER OF SECTORS { compact 3 } radial
{ separated } 360 deg max .. deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS Harmonic 2
Circular 8
CONDUCTOR, material and type Cu Strip
STORED ENERGY (cryogenic) MJ
POWER: main coils 40 max, kW; current stability
trimming coils max, kW; current stability
WEIGHT: Fe 50 tons; coils 8 tons
COOLING system H2O
ION ENERGY (bending limit) E/A = 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 2-3 cm; DC Bias kV
TUNED by, coarse M.S. fine M.S.
RF 12 to 16 MHz, stable +/- 2/10^6
Orb F 12 to 16 MHz
HARMONICS, RF/Orb F, used 1
DEE - Gnd, max 27 kV, min gap 0.3 cm
STABILITY, (pk-pk noise)/(pk RF volt) 0.001
ENERGY GAIN, max 54 kV/turn
RF PHASE, stable to +/- 3 deg
RF POWER input, max 45 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width
VACUUM SYSTEM
OPERATING PRESSURE 4 x 10^-6 Torr or mbar
PUMPS, No, Type, Size 1 x 40 cm
2 x 22 cm Silicon Oil Diff.
ION SOURCES
Internal Hot Cathode
External Pol D+, Pol 3He

INJECTION SYSTEM

Axial

EXTRACTION SYSTEM

Mag/Plect. Regenerator & Plect. Def.

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 90 m^2; movable 0 m^2

TARGET STATIONS 6 in 1 rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type

COMPUTER model GEC

OTHER FACILITIES 10 Mass Ident System

using counter telescopes

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Rows for 4He, 3He, D+, P.

SECONDARY

(part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH 30 RF deg 10 pA of 33 MeV 3He ions
PHASE EXC, max 15 RF deg 10 pA of MeV ions
EXTRACT eff 60% pA of MeV ions
RESOL ΔE/E 0.4% pA of MeV ions
EMITTANCE
(π mm. mrad) { 40 axial } pA of MeV ions
{ 40 rad }

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS 30% SOLID STATES PHYSICS
BIOMEDICAL APPLICAT. 10% ISOTOPE PRODUCTIONS 60%

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

Although this machine was used in the nuclear structure field it now concentrates mainly on isotope production producing 81Kr, 52Fe, 57Co, 22Ne. Isotopes are produced internally and externally.