

ENTRY No. 49

NAME OF MACHINE JAERI AVE Cyclotron... DATE 1. May, 1989...
INSTITUTION Takasaki Radiation Chemistry Research Establishment, Japan Atomic Energy Research Institute
ADDRESS 1233 Watanuki-cho, Takasaki, Gunma, Japan 370-12...
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IN CHARGE R. Tanaka... REPORTED BY K. Arakawa...

HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date 1988-1991
FIRST BEAM, date (or goal) 1990
MAJOR ALTERATIONS

COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY The Science and Technology Agency...

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS ENGINEERS
TECHNICIANS CRAFTS

GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION hr/wk, On target hr/wk

TIME DISTR. in house % , Outside %
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) 21.6 cm, R extraction 92.3 cm
R injection cm
GAP, min 1.6 cm, Field 19.6 kG
max 4.0 cm, Field 11.3 kG at 408,000

AVERAGE FIELD at R ext 16.3 kG Ampere turns
B max/ <B>

NUMBER OF SECTORS {compact 4 separated} Spiral, max 5.3 deg

SECTOR ANGLE (SSC) deg
TRIMMING COILS 12 pairs

CONDUCTOR, material and type Cu-Hollow conductor
STORED ENERGY (cryogenic) MJ

POWER: main coils .250 max, kW; current stability +/- 1x10^-5
trimming coils .52 max, kW; current stability +/- 2x10^-4

WEIGHT: Fe 220 tons; coils 9 tons
COOLING system Deionized water
ION ENERGY (bending limit) E/A = .110 q^2/a^2 MeV/amu
(focusing limit) E/A = .95 q^2/a^2 MeV/amu

ACCELERATION SYSTEM

DEES, number 2; angle .86 deg
BEAM APERTURE 4.0 cm; DC Bias .0 kV

TUNED by, coarse Shorting pl. fine Compensator
RF 10.7 to 22 MHz, stable +/- 1x10^-6
Orb F 3.6 to 22 MHz

HARMONICS, RF/Orb F, used 1, 2, 3
DEE - Gnd, max .60 kV, min gap 4.0 cm

STABILITY, (pk-pk noise)/(pk RF volt) +/- 1x10^-4
ENERGY GAIN, max For protons (H=1) 160 kV/turn

RF PHASE, stable to +/- 0.5 deg
RF POWER input, max 2 x 70 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 5x10^-7 Torr or mbar
PUMPS, No, Type, Size
4 x Cryogenic pump (4000 L/s for N2)

ION SOURCES

External ECR & Multi-cusp

INJECTION SYSTEM

Axial injection with spiral inflector

EXTRACTION SYSTEM

DC electrostatic deflector + Magnetic channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 4000 m^2; movable 0 m^2

TARGET STATIONS 18 in 8 rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES On-line isotope separator

Hot cells, Beam Chopping system

Fast neutron production

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Rows: Proton, Deuteron, 4He, Ar-41, Ar-42.

SECONDARY

Neutron Be(d, n)
Be(p, n)

BEAM PROPERTIES

Table with columns: MEASURED, CONDITIONS. Rows: PULSE WIDTH, PHASE EXC, EXTRACT eff, RESOL DELTA/E, EMITTANCE.

(pi mm, mrad) {axial rad} pA of MeV ions

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS

BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

