

ENTRY NO. 47

NAME OF MACHINE 750 CYCLOTRON
INSTITUTION Nihon Medi-Physics Co., Ltd Chiba Facility
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IN CHARGE M. Takahashi REPORTED BY M. Takahashi

HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date Sumitomo, CGR MeV 750PV
CONSTRUCTION, date Sep. 1985
FIRST BEAM, date (or goal) Jun. 1986
MAJOR ALTERATIONS

COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS 7
TECHNICIANS 8 CRAFTS
GRAD STUDENTS involved during year
OPERATED BY Research staff or 14 Operators
OPERATION 120 hr/wk. On target 110 hr/wk
TIME DISTR. in house 100 % 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) 180 cm, R-extraction 75 cm
R injection cm
GAP, min 13.3 cm, Field 20 kG
max 31.5 cm, Field 15.7 kG at 263,000
AVERAGE FIELD at R ext 16.4 kG Ampere turns
B max / < B >

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

SECTOR ANGLE (SSC) deg
TRIMMING COILS Harmonic Coils 4 pairs
Circular Coils 10 pairs

CONDUCTOR, material and type OF Cu, hollow conductor

STORED ENERGY (cryogenic) MJ

POWER: main coils 105 max kW; current stability 2×10^{-5}
trimming coils 10 max kW; current stability 5×10^{-4}

WEIGHT: Fe 120 tons; coils 5 tons

COOLING system Deionized Water 700 l/m at 8 kg/cm²

ION ENERGY (Bending limit) E/A = q²/A² MeV/amu
(Focusing limit) E/A = q/A MeV/amu

ACCELERATION SYSTEM

DEES, number 2 angle 83 deg

BEAM APERTURE 2.4 cm; DC Bias 10 kV

TUNED by, coarse Shorting plate fine Compensator
RF 13 to 25 MHz, stable $\pm 10^{-7}$

Orb F to MHz
HARMONICS, RF/Orb F, used H=1 (proton)

DEE-Gnd, max 50 kV, min gap 3.95 cm

STABILITY, (pk-pk noise)/(pk RF volt) $\pm 10^{-3}$

ENERGY GAIN, max 127 kV/turn

RF PHASE, stable to ± 0.1 deg

RF POWER input, max 80 kW

FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 2×10^{-5} Torr or mbar

PUMPS, No, Type, Size 2000 l/s 2 sets

ION SOURCES

Axial Livingstones Type

INJECTION SYSTEM

EXTRACTION SYSTEM

Deflector, Magnetic Channel, Gradient Connector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 136 m²; movable m²

TARGET STATIONS 6 in 1 rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type

COMPUTER model Intel 310

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pμA)	
	Goal	Achieved	Internal	External
p		7.0	200	55
p		25	200	100

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED	CONDITIONS	
	μA of	MeV ions
PULSE WIDTH RF deg		
PHASE EXC. max RF deg		
EXTRACT eff 60 %	50 μA of	30 MeV ions
RESOL ΔE/E %		
EMITTANCE		

(π mm-mrad) axial μA of MeV
rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT ISOTOPE PRODUCTIONS 100 %

REFERENCES/NOTES

1)
2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.