

ENTRY NO. 45

NAME OF MACHINE . 480. CYCLOTRON
 INSTITUTION . Nihon. Medi-Physics. Co., Ltd. Chiba. Facility
 ADDRESS . 3-1. Kitasode. Sodegaura. Township. Chiba. Japan
 TEL . 0438-63-4771. TELEX
 IN CHARGE . S. Nakamoto. REPORTED BY . M. Takahashi.

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date Sumitomo, CGR. MeV. 480.PF
 CONSTRUCTION, date Nov. 1984
 FIRST BEAM, date (or goal) Jun. 1985
 MAJOR ALTERATIONS

COST, ACCELERATOR

COST, FACILITY, total
 FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS . 5
 TECHNICIANS . 7 CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or . 11 Operators
 OPERATION 100 hr/wk. On target 90 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) . 115 cm, R-extraction . 48 cm
 R injection cm
 GAP, min . 8.6 cm, Field . 20 kG
 max . 14.1 cm, Field . 15.7 kG } at 17.1, 20.0
 AVERAGE FIELD at R ext 16.6 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 6 pairs

CONDUCTOR, material and type . OF. Cu, hollow conductor.
 STORED ENERGY (cryogenic) MJ

POWER: main coils . 66 max kW: current stability 2×10^{-5}
 trimming coils . 2 max kW: current stability 5×10^{-4}

WEIGHT: Fe 28 tons: coils 1 tons

COOLING system . Deionized Water. 300l/m at 6 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 2.21 cm; DC Bias 1.0 kV
 TUNED by, coarse Shorting plate line Compensator
 RF to 24.0 fixed MHz, stable \pm 10.7
 Orb F to MHz
 HARMONICS, RF/Orb F, used . H=1 (proton)
 DFE-Gnd, max 40 kV, min gap 2.16 cm
 STABILITY, (pk-pk noise)/(pk RF volt) $\pm 10^{-3}$
 ENERGY GAIN, max 99 kV/turn
 RF PHASE, stable to \pm 0, 1 deg
 RF POWER input, max. 65 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. D.P. 1 set

ION SOURCES

. Axial. Livingstones. Type

INJECTION SYSTEM

EXTRACTION SYSTEM

. Deflector, Gradient corrector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 84 m²; movable m²
 TARGET STATIONS 5 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 (μ A)	
	Goal	Achieved	Internal	External
p		30	200	80
SECONDARY			(part/s)	

BEAM PROPERTIES

MEASURED		CONDITIONS	
PULSE WIDTH RF deg	μ A of	MeV	ions
PHASE EXC. max RF deg	μ A of	MeV	ions
EXTRACT eff. 75 %	50 μ A of	28 MeV	p ions
RESOL $\Delta E/E$ %	μ A of	MeV	ions
EMITTANCE			

(π mm-mrad) axial μ A of MeV
 rad 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.