ENTRY NO. 44

NAME OF MACHINE Mini Cyclotron Model-370 (Sumitomo-CGR MeV)
INSTITUTION Chiba Medical School Hospital
ADDRESS 1-8-1 Inohana Chiba-city, Chiba 280, Japan
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IN CHARGE S. Uematsu REPORTED BY Y. Ito

HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date 1985
FIRST BEAM, date (or goal) Sept. 1985
MAJOR ALTERATIONS
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 4 (doctor) ENGINEERS 1
TECHNICIANS 2 CRAFTS
GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION 30 hr/wk. On target 10 hr/wk
TIME DISTR. in house 100 %, outside %
BUDGET, op & dev
FUNDED BY

RESEARCH STAFF, not included above

USERS, in house outside 1
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET

POLE FACE, diameter (compact) 88 cm, R-extraction 37 cm
R injection cm
GAP, min 7 cm, Field kG
max 12 cm, Field kG } at 1.66×10^5 Ampere turns
AVERAGE FIELD at R ext 17.7 kG
B max/<B>
NUMBER OF SECTORS { compact 4 / separated } Spiral, max deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS Harmonic 4 pairs
Circular 4 pairs
CONDUCTOR, material and type Copper Hollow
STORED ENERGY (cryogenic) MJ
POWER: main coils 78 max kW: current stability 2×10^{-6}
trimming coils 3 max kW: current stability
WEIGHT: Fe 16 tons: coils 1 tons
COOLING system Demineralized water
ION ENERGY (Bending limit) E/A = q^2/A^2 MeV/amu
(Focusing limit) E/A = q/A MeV/amu

ACCELERATION SYSTEM

DEES, number 1 angle 180 deg
BEAM APERTURE 1.8 cm; DC Bias kV
TUNED by, coarse fine
RF 25 and 40 MHz, stable ±
Orb F 25 and 13.3 MHz
HARMONICS, RF/Orb F, used 1, 3
DEE–Gnd, max 40 kV, min gap 2.2 cm
STABILITY, (pk-pk noise)/(pk RF volt) 1×10^{-3}
ENERGY GAIN, max 80 kV/turn
RF PHASE, stable to ± deg
RF POWER input, max. 25 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 2×10^{-5} Torr ~~or mbar~~
PUMPS, No, Type, Size 1, Diffusion pump 1300 l/sec

ION SOURCES

Livingstone-Jones type

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic deflector and magnetic channel (static)

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 41 m^2; movable m^2
TARGET STATIONS 1 in 1 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (μA) Internal	External
P		18		70
d		10		70
SECONDARY			(part/s)	

BEAM PROPERTIES

	MEASURED	CONDITIONS
PULSE WIDTH	RF deg	pμA of MeV ions
PHASE EXC. max	RF deg	pμA of MeV ions
EXTRACT eff	%	pμA of MeV ions
RESOL ΔE/E	%	pμA of MeV ions
EMITTANCE		
(π mm-mrad)	axial	pμA of MeV
	rad	

OPERATING PROGRAMS, time distribution

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

REFERENCES/NOTES

1)
2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.