

ENTRY No. 54 Mini Cyclotron Model-325
 (Sumitomo-CGR MeV)
NAME OF MACHINE DATE Apr. 15, 1989
INSTITUTION Kyoto University Hospital, Kyoto University
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IN CHARGE Junji Konishi **REPORTED BY** Hideo Saji, Yasuhiro Magata

HISTORY AND STATUS

DESIGN, date Model tests
 ENG DESIGN, date
 CONSTRUCTION, date 1982
 FIRST BEAM, date (or goal) Aug. 1982
MAJOR ALTERATIONS
 COST, ACCELERATOR
 COST, FACILITY, total
 FUNDED BY
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
 SCIENTISTS ENGINEERS
 TECHNICIANS CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or Operators
 OPERATION 40 hr/wk, On target 30 hr/wk
 TIME DISTR. in house 100 % , Outside %
 BUDGET, op & dev
 FUNDED BY Japan Ministry of Education
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) 81 cm, R extraction 32.5cm
 R injection cm
 GAP, min 7 cm, Field kG }
 max 12 cm, Field kG } at 1.87 x 10⁵
 AVERAGE FIELD at R ext 17.6 kG } Ampere turns
 B max/ < B >
 NUMBER OF SECTORS { compact 4 } Spiral, max .. deg
 separated
 SECTOR ANGLE (ISSC) deg
 TRIMMING COILS Harmonic 4 pairs
CONDUCTOR, material and type Copper hollow
 STORED ENERGY (cryogenic) MJ
 POWER: main coils .66 max, kW ; current stability 2x10⁻⁶
 trimming coils max, kW ; current stability
 WEIGHT: Fe 13 tons ; coils 1 tons
 COOLING system Demineralized water
 ION ENERGY (bending limit) E/A = q²/a² MeV/amu
 (focusing limit) E/A = q²/a² MeV/amu
ACCELERATION SYSTEM
 DEES, number 1 ; angle 180 deg
 BEAM APERTURE 2 cm ; DC Bias 7 kV
 TUNED by, coarse short plate fine
 RF 26 to 40 MHz, stable ±
 Orb F 26 to 13.3 MHz
 HARMONICS, RF/Orb F, used 1, 3
 DEE - Gnd, max 40 kV, min gap 2 3 cm
 STABILITY, (pk-pk noise)/(pk RF volt) 1 x 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 x 10⁻⁵ Torr or mbar
 PUMPS, No, Type, Size
 1, Diffusion pump, 1300 l/sec.
ION SOURCES
 Livingstone-Jones type

INJECTION SYSTEM

EXTRACTION SYSTEM

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 110 m² ; movable m²
 TARGET STATIONS in rooms
 STATIONS served at same time, max
 MAG SPECTROGRAPH, type
 COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
p		15		50
d		8		50

SECONDARY

(part/e)

BEAM PROPERTIES

MEASURED	CONDITIONS	
	MEASURED	CONDITIONS
PULSE WIDTH RF deg	pA of	MeV ions
PHASE EXC, max RF deg	pA of	MeV ions
EXTRACT eff %	pA of	MeV ions
RESOL ΔE/E %	pA of	MeV ions
EMITTANCE		

(π mm. mrad) { axial } pA of MeV ions
 { rad }

OPERATING PROGRAMS, time distribution

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

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS