

ENTRY NO. CU52 Date June 17, 1992
Name of Machine Mini cyclotron Model-325 (Sumitomo Heavy Industry)
Institution Kyoto University Hospital
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In Charge: Junji Konishi, MD Reported by: Yasuhiro Magata, Ph.D.

HISTORY

MILESTONE DATES:

Design Model Tests
Construction 1982 First Beam Aug. 1982

DESIGN/CONSTRUCTION BY: Sumitomo-CGR MeV
in house other

COST: Accelerator Facility

FUNDED BY: Ministry of Education, Japan

STATUS

STAFF: Machine

Scientists Engineers
Technicians 1 Students

Research (in house/external)

Scientists / Engineers /
Technicians / Students

BUDGET: Machine \$200,000 Funded by Japan Ministry of
Research \$35,000 Funded by Education, etc.

TIME DISTRIBUTION:

Basic Research (in house/external) 20 % / %
Applied Program (in house/external) 70 % / %
Development % Maintenance 10 %

MAGNET

POLE PARAMETERS:

Diameter 81 cm R_{extract} 32.5 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 7 cm B_{max} T
(0 AT) Gap (max) cm B_{min} T

VALLEY PARAMETERS: Gap (min) 12 cm B_{max} T
(0 AT) Gap (max) cm B_{min} T

AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ 1.76 T $\langle B \rangle_{\text{max}}$ T

NUMBER OF SECTORS: compact/separated 4 /
sector angle deg. spiral (max) deg.

FIELD TRIMMING: Trim Coils
Harmonic Coils 4 pairs

Other

CURRENT: Main Coils 12.4 A Amps Stability
Trim Coils Amps Stability

Stored Energy (cryogenic) MJ

WEIGHT: Iron 13.5 tons Conductor 1.5 tons

ION ENERGY: Bending Limit $E/A =$ q^2/A^2 MeV/u
Focussing Limit $E/A =$ q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: AVE
No. of Gaps/turn $dE/dn(\text{max})$ MeV/q
Voltage(max) 27.2 kV MV Harmonic $f_{\text{rf}}/f_{\text{ion}}$
Freq. 28.4, 40 MHz Power in(max) MW
Stability: Phase Voltage

OTHER CAVITIES (Flattopping or otherwise):

Description:
Region of Influence: R_{min} cm R_{max} cm
No. of Gaps/turn $dE/dn(\text{max})$ MeV/q
Voltage(max) MV Harmonic $f_{\text{rf}}/f_{\text{ion}}$
Freq. MHz Power in(max) MW
Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: 2×10^{-5} torr

PUMPS: No. and type
1 diffusion pump 1300 l/sec

ION SOURCE(S)

Type	Intensity (mA)	$\epsilon_n = \beta\gamma\epsilon$ (π mm mrad)	Ion Species
(a) Livingstone-Jones			H_2^+, D_2^+
(b)			
(c)			
(d)			

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Efficiency %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current(part μA) Internal External
(a) p	15 MeV	50 50
(b) d	8 MeV	50 50
(c)		
(d)		

Secondary Particles	E (MeV)	part/sec
(a)		
(b)		
(c)		

EXTRACTED BEAM PROPERTIES:

For μA of MeV/u ions
 $\Delta E/E$ % $\Delta\phi$ °rf
 $\epsilon_n = \beta\gamma\epsilon$ x π mm mrad z π mm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed 110 m² Moveable m²
Target Stations: No. Served At Same Time:

MAGNETIC SPECTROMETERS:

OTHER FACILITIES:

REFERENCES/NOTES

(a)
(b)

PLAN VIEW OF FACILITY, COMMENTS