

ENTRY NO. **C52** Date **June 25/92**
 Name of Machine **Gatchina cyclotron**
 Institution **PNPI Russian Academy of Sciences**
 Address **Gatchina, Petersburg, District, I88350, Russia**
 Tel **Telex** Fax **EMAIL**
 In Charge: **N.K. Abrosimov** Reported by:

HISTORY

MILESTONE DATES:
 Design 1990 - 1992 Model Tests 1991 - 1992
 Construction 1992 - 1994 First Beam
 DESIGN/CONSTRUCTION BY:
 in house **Yes** other **various engineering contracts**
 COST: Accelerator Facility
 FUNDED BY:

STATUS

STAFF: Machine
 Scientists Engineers
 Technicians Students
 Research (in house/external)
 Scientists Engineers /
 Technicians Students /
 BUDGET: Machine Funded by
 Research Funded by
 TIME DISTRIBUTION:
 Basic Research (in house/external) % / %
 Applied Program (in house/external) % / %
 Development % Maintenance %

MAGNET

POLE PARAMETERS:
 Diameter 205 cm R_{extract} 85-90 cm R_{inject} cm
 HILL PARAMETERS: Gap (min) 146 cm B_{max} T
 (0 AT) Gap (max) cm B_{min} T
 VALLEY PARAMETERS: Gap (min) 386 cm B_{max} T
 (0 AT) Gap (max) cm B_{min} T
 AVERAGE FIELD: < B >_{min} 1.52 T < B >_{max} 1.46 T
 NUMBER OF SECTORS: compact/separated 4 /
 sector angle 42, 5 deg. spiral (max) 60 deg.
 FIELD TRIMMING: Trim Coils
 Harmonic Coils 4x4
 Other
 CURRENT: Main Coils 800 Amps Stability
 Trim Coils Amps Stability
 Stored Energy (cryogenic) MJ
 WEIGHT: Iron 220 Conductor 16 (Cu)
 ION ENERGY: Bending Limit E/A = 80 q²/A² MeV/u
 Focussing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:
 Description: 2, Lambda/4
 No. of Gaps/turn 4 dE/dn(max) 0.200 MeV/q
 Voltage(max) 0.060 MV Harmonic f_{rf}/f_{ion} 2/1
 Freq 41.2 MHz Power in(max) 2x0.040 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(max) MeV/q
 Voltage(max) MV Harmonic f_{rf}/f_{ion}
 Freq MHz Power in(max) MW
 Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: 10⁻⁷ (N₂), 10⁻⁶ (H₂)
 PUMPS: No. and type 2 turbo 10 m³/s
 2 evaporator-getter 60 m³/s (H₂), Cryopanel (N₂)-0.3m²

ION SOURCE(S)

Type	Intensity (mA)	ε _n = βγc (πmm mrad)	Ion Species
(a)		internal	Ehlers, Fig.
(b)		external	Surface, P.
(c)			Cusp
(d)			

INJECTION SYSTEM

axial injection Efficiency %

EXTRACTION SYSTEM

stripping Efficiency 100 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current (part μA)	
		Internal	External
(a) H ⁻	45 - 80	100	p. 100
(b)			
(c)			
(d)			

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

EXTRACTED BEAM PROPERTIES:

For μA of MeV/u ions
 ΔE/E % Δφ °rf
 ε_n = βγc x πmm mrad z πmm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed m² Moveable m²
 Target Stations: No. Served At Same Time:
 MAGNETIC SPECTROMETERS:
 OTHER FACILITIES:

REFERENCES/NOTES

(a) XIII International Cyclotron Conference,
 (b) Vancouver 92

PLAN VIEW OF FACILITY, COMMENTS