

ENTRY NO. C47 Date June 25/92
 Name of Machine Gatchina cyclotron
 Institution PNPI Russian Academy of Sciences
 Address Gatchina, Petersburg, District, 188350, 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 contractors

COST: Accelerator Facility

FUNDED BY:

ION SOURCE(S)

| Type | Intensity (mA) | Θ (mm mrad) | $\epsilon_n = \beta\gamma\epsilon$ (mm mrad) | Ion Species |
|-----------|----------------|--------------------|--|----------------------|
| (a) | | | | internal Ehlers Fig. |
| (b) | | | | external Surface p. |
| (c) | | | | Cusp |
| (d) | | | | |

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 %

INJECTION SYSTEM

axial injection Efficiency %

EXTRACTION SYSTEM

stripping Efficiency 100 %

CHARACTERISTIC BEAMS

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

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

MAGNET

POLE PARAMETERS:
 Diameter 205 cm $R_{extract}$ 85-90 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 146 cm B_{max} T
 (Θ AT) Gap (max) cm B_{min} T

VALLEY PARAMETERS: Gap (min) cm B_{max} T
 (Θ AT) Gap (max) 386 cm B_{min} T

AVERAGE FIELD: $\langle B \rangle_{min}$ 1.352 T $\langle B \rangle_{max}$ 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

EXTRACTED BEAM PROPERTIES:

For μ A 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 m² Moveable m²
 Target Stations: No. Served At Same Time:

MAGNETIC SPECTROMETERS:

OTHER FACILITIES:

REFERENCES/NOTES

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

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 4,2 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

PLAN VIEW OF FACILITY, COMMENTS

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)-03m²