

ENTRY NO. FM4 Date October 1995
 Name of Machine Synchrotron on 1 GeV
 Institution Petersburg Nuclear Physics Institute of Russian Academy of Sciences
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 In Charge: N. K. Abrosimov Reported by:

HISTORY

MILESTONE DATES:

Design Model Tests
 Construction 1967 First Beam Nov. 1967

DESIGN/CONSTRUCTION BY:

in house other
 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) % / %
 Maintenance % Development %

MAGNET

POLE PARAMETERS:

Diameter 685 cm R_{extract} 315 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 39 cm B_{max} T

(@ AT) Gap (max) 20 cm B_{min} T

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

(@ AT) Gap (max) cm B_{min} T

AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ T $\langle B \rangle_{\text{max}}$ 1.9 T

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

FIELD TRIMMING: Trim Coils

Harmonic Coils

Other

CURRENT: Main Coils 4800 Amps Stability $2 \cdot 10^{-5}$

Trim Coils Amps Stability

Stored Energy (cryogenic) MJ

WEIGHT: Iron 7800 kg Conductor 174 (Al)

ION ENERGY: Bending Limit E/A = 1000 q²/A² MeV/u

Focusing Limit E/A = q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: 1/2, 100 dee rotating capacitor

No. of Gaps/turn 2 dE/dn(max) MeV/q

Voltage (max) 0.010 MV Harmonic f_r/f_{ion} 1

Freq 29-13,3 MHz Power in(max) 0,2 MW

Stability: Phase Voltage

OTHER CAVITIES (Flattopping or otherwise):

Description: C-electrode for slow extraction

Region of Influence: R_{min} 295 cm R_{max} 320 cm

No. of Gaps/turn 2 dE/dn(max) MeV/q

Voltage (max) 0.003 MV Harmonic f_r/f_{ion} 1

Freq 13,3 MHz Power in(max) 0.002 MW

Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: $2 \cdot 10^{-6}$ Torr

PUMPS: (No. and type) 2 diffusion pumps

2×40000 l/s

ION SOURCE(S)

Type	Intensity (mA)	@ $\epsilon_n = \beta\gamma\epsilon$ (π mm mrad)	Ion Species
(a) open with cold cathod			
(b)			
(c)			
(d)			

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

non-linear regenerative system Efficiency 30 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current (part μ A)	
		Internal	External
(a) P	1000	3	1
(b)			
(c)			
(d)			

Secondary Particles	E (MeV)	part/sec
(a) π^+	150	$1.6 \cdot 10^7$
(b) μ^+	90	$3 \cdot 10^5$
(c) μ^+	4	$3 \cdot 10^4$

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: Spectrometric P-beam and Spectrometer with 0.03% resolution, Muon Channel, Two Pion Channels, Medical Facility for Proton Therapy, TOF Neutron Spectrometer, Facility for Investigation Radioactive Isotope (IRIS)

REFERENCES/NOTES

(a) Proc. of the VII-All-Union Conference on
 (b) Charged Particle Accel., V2, P75 (1980)

PLAN VIEW OF FACILITY, COMMENTS