ENTRY NO. FM5 **Date**

Name of Machine JINR PHASOTRON

Institution Joint Institute for Nuclear Research, Laboratory of Nuclear Problems

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In Charge: Is. Vylov Reported by: L. Onischenko

HISTORY

MILESTONE DATES:

Design 1967 Model Tests 1968-74

Construction 1979-84 First Beam 1984

DESIGN/CONSTRUCTION BY:

in house other

COST: Accelerator Facility $18 \cdot 10^6$ roubles

FUNDED BY: JINR

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 600 cm $R_{extract}$ 270 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 15 cm B_{max} 1.8 T

(© AT) Gap (max) 30 cm B_{min} T

VALLEY PARAMETERS: Gap (min) cm B_{max} 1.2 T

(© AT) Gap (max) cm B_{min} T

AVERAGE FIELD: $< B >_{min}$ 1.2 T $< B >_{max}$ 1.63 T

NUMBER OF SECTORS: compact/separated 4 /

sector angle deg. spiral (max) 77 deg.

FIELD TRIMMING: Trim Coils 3

Harmonic Coils

Other

CURRENT: Main Coils 4000 Amps Stability $2 \cdot 10^{-4}$

Trim Coils Amps Stability

Stored Energy (cryogenic) MJ

WEIGHT: Iron 7000 tons Conductor 165 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:

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

Voltage(max) 0.04 MV Harmonic f_{rf}/f_{ion} 1

Freq 18.6-14.4 MHz Power in(max) 0.3 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: $2 \cdot 10^{-6}$ Torr

PUMPS: No. and type 5 diffusion pumps with nitrogen baffles

ION SOURCE(S)

	Type	Intensity (mA)	©	$\epsilon_n = \beta\gamma\epsilon$ (πmm mrad)	Ion Species
(a)	Pig type				
(b)					
(c)					
(d)					

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Regenerative extraction Efficiency 50 %

Iron-current channel

CHARACTERISTIC BEAMS

	Accelerated Ions	E/A (MeV/u)	Current(part μA) Internal	External
(a)	p	680	7	3.5
(b)				
(c)				
(d)				

	Secondary Particles	E (MeV)	part/sec
(a)	μ^+_-		$3 \cdot 10^5$ /μA·s
(b)	μ^-		$1 \cdot 10^5$ /μA·s
(c)			

EXTRACTED BEAM PROPERTIES:

For μA of MeV/u ions

$\Delta E/E$ 1.5 % $\Delta\phi$ °rf

$\epsilon_n = \beta\gamma\epsilon$ x 5.1 πmm mrad z 3.4 πmm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed 1500 m² Moveable m²

Target Stations: 4-7 No. Served At Same Time: 2-3

MAGNETIC SPECTROMETERS:

OTHER FACILITIES: Medico-Biological Complex

YASNAPP (ISOL)

REFERENCES/NOTES

(a)

(b)

PLAN VIEW OF FACILITY, COMMENTS