

ENTRY NO. C44 Date November 27, 1995
 Name of Machine V - 200P Cyclotron
 Institution Heavy Ion Laboratory, Warsaw University
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HISTORY

MILESTONE DATES:

Design 1978 Model Tests
 Construction 1989 Final site First Beam 1993

DESIGN/CONSTRUCTION BY:

in house Yes other Ins Swierk, JINR Dubna

COST: Accelerator Facility

FUNDED BY: Ministry of Education,

State Comm. for Sci. Research,

Warsaw University

STATUS

STAFF: Machine

Scientists 3 Engineers 18

Technicians 21 Students ---

Research (in house/external)

Scientists 10 / ~20 Engineers /

Technicians / Students / ~10

BUDGET: Machine Total Funded by As. above

Research 3 MLN PLN Funded by

TIME DISTRIBUTION:

Basic Research (in house/external) 10 % / 10 %

Applied Program (in house/external) 5 % / 10 %

Maintenance 15 % Development 50 %

MAGNET

POLE PARAMETERS:

Diameter 200 cm R_{extract} 85 cm R_{inject} cm

HILL PARAMETERS: Gap (min) 2.7 cm B_{max} 2.63 T

(@ AT) Gap (max) 5.15 cm B_{min} 2.5 T

VALLEY PARAMETERS: Gap (min) 15.2 cm B_{max} 1.7 T

(@ AT) Gap (max) 15.2 cm B_{min} 1.6 T

AVERAGE FIELD: $\langle B \rangle_{\text{min}}$ 1.8 T $\langle B \rangle_{\text{max}}$ 2.1 T

NUMBER OF SECTORS: compact/separated / 4

sector angle 42 deg. spiral (max) deg.

FIELD TRIMMING: Trim Coils 10 pairs

Harmonic Coils

Other

CURRENT: Main Coils 1300 Amps Stability 10^{-4}

Trim Coils 300 Amps Stability $4 \cdot 10^{-4}$

Stored Energy (cryogenic) MJ

WEIGHT: Iron 240 tonnes Conductor 30 tonnes

ION ENERGY: Bending Limit E/A = 160 $\text{q}^2/\text{A}^2 \text{ MeV/u}$

Focusing Limit E/A = 36 q/A MeV/u

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: 2.45 Degrees Dees

No. of Gaps/turn 4 $dE/dn(\text{max})$ 0.3 MeV/q

Voltage (max) 0.076 MV Harmonic f_H/f_{ion} 1, 2, 3, 4

Freq 12.1 21 MHz Power in(max) 2 x 0.12 MW

Stability: Phase 1 Deg. Voltage 10^{-4}

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_H/f_{ion}

Freq MHz Power in(max) MW

Stability: Phase Voltage

VACUUM SYSTEM

OPERATING PRESSURE: $5 \cdot 10^{-6}$ Tr.

PUMPS: (No. and type) 4 SP-6000 Pumps

1700 L/s each

ION SOURCE(S)

	Type	Intensity (mA)	@ $\epsilon_n = \beta \gamma \epsilon$ (mm mrad)	Ion Species
(a)	PIG	ion dependant		He-Ar ₁ gas
(b)	ECR	under development		
(c)				
(d)				

INJECTION SYSTEM

Efficiency %

EXTRACTION SYSTEM

Stripping Efficiency %

CHARACTERISTIC BEAMS

	Accelerated Ions	E/A (MeV/u)	Current (part μA)
			Internal External
(a)	12C^{2+}	3-4	~0.5
(b)	16O^{3+}	4-5	~2 ~0.5
(c)			
(d)			

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

EXTRACTED BEAM PROPERTIES:

For μA of MeV/u ions

$\Delta E/E$ % $\Delta \phi$ °ff

$\epsilon_n = \beta \gamma \epsilon$ x $\pi \text{ mm mrad}$ z $\pi \text{ mm mrad}$

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: 30 m^2 Moveable 1300 m^2

Target Stations: 7 No. Served At Same Time: 1

MAGNETIC SPECTROMETERS:

OTHER FACILITIES:

REFERENCES/NOTES

(a)

(b)

PLAN VIEW OF FACILITY, COMMENTS

Operations restricted to the beams below or around the coulomb barrier (3 and 4 Harmonics) until radiation protection system is completed.