ENTRY NO. C27 **Date** Oct. 1, 1995

Name of Machine Rossendorf U-120 Cyclotron

Institution Research Center Rossendorf

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In Charge: **Reported by:** H. Guratzsch

HISTORY

MILESTONE DATES:

Design ..... Model Tests .....

Construction ..... First Beam 1958

DESIGN / CONSTRUCTION BY:

in house ..... other NIIEFA St.Petersburg

COST: Accelerator ..... Facility .....

FUNDED BY: .....

STATUS

STAFF: Machine

Scientists ..... Engineers 2

Technicians 3 Students .....

Research (in house/external)

Scientists 2 / ..... Engineers ..... / .....

Technicians 2 / ..... Students ..... / .....

BUDGET: Machine ..... Funded by .....

Research ..... Funded by .....

TIME DISTRIBUTION:

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

Applied Program (in house/external) 50 % / 50 %

Maintenance ..... % Development .....%

MAGNET

POLE PARAMETERS: Classical Cyclotron

Diameter 120 cm $R_{extract}$ 52.5 cm R_{inject} ..... cm

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

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

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

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

AVERAGE FIELD: $<B>_{min}$ 1.0 T $<B>_{max}$ 1.4 T

NUMBER OF SECTORS: compact/separated ..... / .....

sector angle ..... deg. spiral (max) ..... deg.

FIELD TRIMMING: Trim Coils 6

Harmonic Coils 4

Other .....

CURRENT: Main Coils 550 Amps Stability 10^{-4}

Trim Coils 600 Amps Stability 10^{-4}

Stored Energy (cryogenic) ..... MJ

WEIGHT: Iron 120 t Conductor 15 t

ION ENERGY: Bending Limit E/A = ... q^2/A^2 MeV/u

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

ACCELERATION SYSTEM

FUNDAMENTAL ACCELERATION:

Description: .....

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

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

Freq 8-16 MHz Power in(max) 0.1 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^{-3} Pa

PUMPS: (No. and type) Oil Diffusion Pumps

.....

ION SOURCE(S)

	Type	Intensity (mA)	@ $\varepsilon_n = \beta\gamma\varepsilon$ (π mm mrad)	Ion Species
(a)	PIG	.....	p, d, α	.....
(b)	.....	.....	.....	.....
(c)	.....	.....	.....	.....
(d)	.....	.....	.....	.....

INJECTION SYSTEM

..... Efficiency ..... %

EXTRACTION SYSTEM

Electrostatic Deflector ..... Efficiency 50 %

CHARACTERISTIC BEAMS

Accelerated Ions	E/A (MeV/u)	Current (part μA) Internal	External
(a) p_+	13	.....	50
(b) H_2^+	7	.....	50
(c) d	7	.....	50
(d) α	7	.....	20

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

EXTRACTED BEAM PROPERTIES:

For ..... μA of ..... MeV/u ..... ions

$\Delta E/E$ .....% $\Delta\phi$ ..... °rf

$\varepsilon_n = \beta\gamma\varepsilon$ x ..... π mm mrad z ..... π mm mrad

FACILITIES FOR RESEARCH

SHIELDED AREA: Fixed: 70 m^2 Moveable ..... m^2

Target Stations: 4 No. Served At Same Time: 1

MAGNETIC SPECTROMETERS: .....

OTHER FACILITIES: .....

Isotope Production

Thin Layer Activation

Neutron Therapy

REFERENCES/NOTES

(a) .....

(b) .....

PLAN VIEW OF FACILITY, COMMENTS