

Entry: **C30**
Machine Name: Cyclotron U-120
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HISTORY

Design by: NIEFA, St. Petersburg
Construction time: 1956
First beam: 1958

CHARACTERISTIC BEAMS

ions / energy (MeV/n) / current (pps) / power (W) :

- p. / 7 MeV / 13 MeV / 50 μ A
- d. / 14 MeV / 50 μ A
- α / 28 MeV / 20 μ A

transmission efficiency (total)

- typical: % - best: %

transverse emittance (rms)

- vertical: π mmrad
- horizontal: π mmrad

longitudinal emittance (rms) $\Delta E/E$ deg RF

USES

basic research: % therapy: %
development: % isotope production: %
other applications: % maintenance: %
beam tuning: %
total time: h/year

TECHNICAL DATA

a) magnet

type:

Kb: McV/A Kf: McV/A

average field (min-max): 1.4 T

number of magnet sectors: (classical cyclotron)

- angle: deg
- spiral (max): deg

pole parameters

- diameter: m
- injection radius: m
- extraction radius: 0.52 m

hill gap: m valley gap: m

field trimming

- trim coils
- number: 2x6
- current (max): 600 A
- harmonic coils
- number: 2x4
- current (max): 14 A
- others
- number:
- current (max): A

main coils:

- number: 2
- Ampere-turns: $2 \cdot 10^9$ A.T.
- current: 600 A

stored energy: MJ

weight : - iron: 100 t - coils: 15 t

power

- main coils (total): 100 kW
- trim coils (total max): kW
- refrigerator (cryogenic): kW

b) RF

- acceleration

- frequency range: 6-16 MHz
- harmonic modes: 1
- number of dees: 2
- angular aperture: 180 deg
- voltage: - average (min-max): 160 kV
- variation with radius:
- power in (max): kW
- stability: - phase: deg - voltage: %

- other cavities

- purpose:
- frequency range: MHz
- region of influence: m
- voltage (max): kV
- power in (max): kW
- stability: - phase: deg - voltage: %

c) injection

- internal source:
- external (radial/axial):
- elements:
- source voltage: kV
- injection energy: MeV/n
- buncher:

- injection efficiency: %

d) ion sources/injector

e) extraction

- elements, characteristics:

- electrostatic deflector, 70 kV

- efficiency

- typical: % - best: %

f) vacuum

- pumps: nil diffusion pumps
- achieved vacuum: Pa

REFERENCES

EXPERIMENTAL FACILITIES

PLAN VIEW OF FACILITY

COMMENTS