

ENTRY NO: C06

Date: 08 Feb 2005 12:32:43

Machine Name: U-120M

Institution: Nuclear Physics Institute, Czech Academy of Sciences

Address: 250 68 Rez, Czech Republic

Telephone: +420266173613

Fax: +4202 2094152

Web Address: <http://www.ujf.cas.cz>

Person in Charge of Cyclotron: J. Stursa

Person Reporting Information: J. Stursa

E-mail Address: stursa@ujf.cas.cz

History

Designed by: JINR Dubna, Russia

Construction Dates:

First Beam Date: August 1977

Characteristic Beams

ions	energy(MeV/n)	current(pps)	power(w)
p+	10 - 37	6×10^{14}	3000
H-	10 - 37	1.6×10^{14}	800
D+	6 - 10	4×10^{14}	2000
3He^{++}	6 - 18	1.3×10^{14}	1080
4He^{++}	6 - 10	1.3×10^{14}	800

Transmission Efficiency (source to extracted beam)

Typical (%) : 52(H⁻)

Best (%) : 75

Emittance

Emittance Definition:

Vertical (π mm mrad) : 8

Horizontal (π mm mrad) : 30

Longitudinal (dE/E[%] x RF[deg.]) :

USES

Basic Research (%) : 18

Development (%) : 2

Therapy (%) :

Isotope Production (%) : 70

Other Application (%) : 8

Maintenance (%) : 2

Beam Tuning (%) :

Total Time (h/year) : 3100

TECHNICAL DATA

(a)Magnet

Type: compact

Kb (MeV) : 40

Kf (MeV) :

Average Field (min./max. T) : 1/1.85

Number of Sectors : 4

Hill Angular Width (deg.) :

Spiral (deg.) : 70

Pole Diameter (m) : 1.2

Injection Radius (m) : 0.026

Extraction Radius (m) : 0.5

Hill Gap (m) : 0.082

Valley Gap (m) : 0.12

Trim Coils

Number: 18x2

Maximum Current (A-turns) : 500 x 5

Harmonic Coils

Number: 2xNsectorsx2

Maximum Current (A-turns) : 200 x 5

Main Coils

Number: 1x2

Total Ampere Turns: 4×10^5

Maximum Current (A) : 650

Stored Energy (MJ) :

Total Iron Weight (tons) : 110

Total Coil Weight (tons) : 11.6

Power

Main Coils (total KW) : 220

Trim Coils (total, maximum, KW) : 150

Refrigerator (cryogenic, KW) :

(b)RF

Acceleration

Frequency Range (MHz) : 10.5 - 26

Harmonic Modes : 1, 3

Number of Dees : 1

Number of Cavities:

Dee Angular Width (deg.) : 180

Voltage

At Injection (peak to ground, KV) : 36

At Extraction (peak to ground, KV) : 36

Peak (peak to ground, KV) : 36

Line Power (max, KW) : 150

Phase Stability (deg.) :

Voltage Stability (%) : 1

(c)Injection

Ion Source: PIG (int.), CUSP (ext.)

Source Bias Voltage (kV) : 10 - 30

External Injection: axial

Buncher Type: first harmonic

Injection Energy (MeV/n) : 0.03

Component: solenoids

Injection Efficiency (%) : 6

Injector:

(d)Extraction

Elements, Characteristic: 3 section electrostatic deflection system (positive ions)/ stripping foil (negative ions)

Typical Efficiency (%) : 25/99

Best Efficiency (%) : 35/100

(e)Vacuum

Pumps: diffusion , turbomolecular pumps

Achieved Vacuum (Pa) : 1×10^{-4}

REFERENCES

EXPERIMENTAL FACILITIES

Achromatic magneto-optical system AMOS, 90°, 5m
Fast neutron generator (p⁺37MeV, D₂O target), 3×10^{12} (n/ster), 3×10^{11} (n/cm²/s)

COMMENTS

