ENTRY NO:C25
Date: 1 Apr 2005 17:00:00
Machine Name: Kazakhstan Isochronous Cyclotron U-150M
Institution: Institute of Nuclear Physics
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History
Designed by: D.V. Efremov Institute, Leningrad
Construction Dates: 1965-1967
First Beam Date: 1967, 1972 (after upgrading)
Characteristic Beams

Ions	Energy (MeV)	Intensity (pps)	Power (w)
protons	6-30	3.1x10E14	15000
deuterons	12.5-25	2.5x10E14	7500
He-3	18.6-62	4.5x10E13	6200
He-4	25-50	6.2x10E13	7500

Transmission Efficiency (source to extracted beam)
Typical (%): 30
Best (%): 60
Emittance
Emittance Definition: 50%
Vertical (pi mm mrad): 16
Horizontal (pi mm mrad): 16
Longitudinal (dE/E[%] x RF[deg.]): o.6x35
USES
Basic Research (%): 29
Development (%): 15
Therapy (%):
Isotope Production (%): 38
Other Application (%): 7
Maintenance (%): 7
Beam Tuning (%): 4
Total Time (h/year): 2400

TECHNICAL DATA
(a)Magnet
Type: compact
Kb (MeV): 50
Kf (MeV): 30
Average Field (min./max. T): 1.22/1.92
Number of Sectors: 3
Hill Angular Width (deg.): 60
Spiral (deg.): 25
Pole Diameter (m): 1.5
Injection Radius (m):
Extraction Radius (m): 0.665
Hill Gap (m): 0.21
Valley Gap (m): 0.35
Trim Coils
Number: 9x2
Maximum Current (A-turns): 600x116
Harmonic Coils
Number: 3x2x2
Maximum Current (A-turns): 3x1042
Main Coils
Number: 1x2
Total Ampere Turns: 1200x420
Maximum Current (A): 1200
Stored Energy (MJ): 0.23
Total Iron Weight (tons): 250
Total Coil Weight (tons): 16
Power
Main Coils (total KW): 230
Trim Coils (total, maximum, KW): 50
Refrigerator (cryogenic, KW):

(b)RF
Acceleration
Frequency Range (MHz): 8.5-19.0
Harmonic Modes: 1-3
Number of Dees: 2
Number of Cavities:
Dee Angular Width (deg.): 180
Voltage
At Injection (peak to ground, KV):
At Extraction (peak to ground, KV):
Peak (peak to ground, KV): 80
Line Power (max, KW): 200
Phase Stability (deg.): 3
Voltage Stability (%): 1

(c)Injection
Ion Source: Penning type
Source Bias Voltage (kV):
External Injection:
Buncher Type:
Injection Energy (MeV/n):
Component:
Injection Efficiency (%):
Injector:

(d)Extraction
Elements, Characteristic: radially focusing dc deflector, magnetic channel
Typical Efficiency (%): 30
Best Efficiency (%): 60

(e)Vacuum
Pumps: diffusion
Achieved Vacuum (Pa): 4x10exp-4

REFERENCES A.A.Arzumanov, L.M.Nemenov, Nucl.Instr.Meth.166,(1973)

EXPERIMENTAL FACILITIES
Experimental facility for measurement of mass and energy distribution of pair fission fragments.
Experimental facility for measurement of double differential cross section of nuclear reactions with emission of light charged particles. Neutron source.

COMMENTS