

ENTRY NO: C32
Date: 3 Feb 2005 18:21:18
Machine Name: U-400
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History

Designed by: FLNR JINR
Construction Dates: 1975-1978
First Beam Date: 16.10.78

Characteristic Beams

ions / energy(MeV/N)/current(pps)/power(w)			
7Li1+	8,6	6 x 10 E13	1800
22Ne2+	4,5	2 x 10 E13	3000
40Ar5+	7,2	5 x 10 E12	4320
48Ca5+	5,4	5 x 10 E12	3900
84Kr8+	3	6,3 x 10 E11	664
208Bi19+	3,4	3,6 x 10 E10	213

Transmission Efficiency (source to extracted beam)

Typical (%): 35
Best (%): 60

Emittance

Emittance Definition:
Vertical (pi mm mrad): 40
Horizontal (pi mm mrad): 80
Longitudinal (dE/E[%] x RF[deg.]): 1 %

USES

Basic Research (%): 70
Development (%): 8
Therapy (%):
Isotope Production (%):
Other Application (%): 27
Maintenance (%): 9
Beam Tuning (%): 1
Total Time (h/year): 5000

TECHNICAL DATA

(a)Magnet

Type: compact
Kb (MeV):
Kf (MeV):
Average Field (min./max. T): 21.1/ 1.98
Number of Sectors: 4
Hill Angular Width (deg.): 45
Spiral (deg.): 0
Pole Diameter (m): 4
Injection Radius (m): 0,05
Extraction Radius (m): 1,2 - 1,8
Hill Gap (m): 0,042
Valley Gap (m): 0,3

Trim Coils

Number: 10x2
Maximum Current (A-turns): 500 A

Harmonic Coils

Number: 4xNsectorsx2
Maximum Current (A-turns): 500 A

Main Coils

Number: 1x2
Total Ampere Turns:
Maximum Current (A): 2500

Stored Energy (MJ):

Total Iron Weight (tons): 2100
Total Coil Weight (tons):

Power

Main Coils (total KW): 850
Trim Coils (total, maximum, KW): 56
Refrigerator (cryogenic, KW):

(b)RF

Acceleration

Frequency Range (MHz): 5,42-12,2
Harmonic Modes: 2

Number of Dees: 2

Number of Cavities: 2

Dee Angular Width (deg.):42

Voltage

At Injection (peak to ground, KV): 25

At Extraction (peak to ground, KV):

Peak (peak to ground, KV): 80

Line Power (max, KW): 140

Phase Stability (deg.):

Voltage Stability (%):

(c)Injection

Ion Source: ECR4M

Source Bias Voltage (kV): 0,2

External Injection: axial

Buncher Type: linear, since

Injection Energy (MeV/n):

Component: selenoids

Injection Efficiency (%): 20-60

Injector:

(d)Extraction

Elements, Characteristic: Stripping foil efficiency

Typical Efficiency (%): 25-100

Best Efficiency (%):

(e)Vacuum

Pumps: 5 oil pumps with nitrogen traps

Achieved Vacuum (Pa): 2,7 x 10⁻⁶

REFERENCES 1. Yu. Ts. Oganessian, I. V. Kolesov, G. G. Gulbekian, B. N. Gikal, V. N. Melnikov et al. in Proc. of IV All-Union Accelerator Conf., Dubna, 1985 pp. 47-53 2. Yu. Ts. Oganessian, I. V. Kolesov, G. G. Gulbekian, B. N. Gikal, V. N. Melnikov et al. in FLNR Scientific Report 1995 - 1996, Dubna, 1997 pp. 267-276

EXPERIMENTAL FACILITIES

VASSILISSA, GFRS, CORSET - DEMON, U-600, MSP-144

COMMENTS