ENTRY NO: C-32
Machine Name: U-400
Date: 8/23/01 7:52:14 AM
Institution: FLNR JINR
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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)/**curre**nt(pps)/**powe**r(w)		
7Li1+	8,6	6 x 10 13	1800
22Ne2+	4,5	2 x 10 13	3000
40Ar5+	7,2	5 x 10 12	4320
48Ca5+	5,4	5 x 10 12	3900
84Kr8+	3	6,3 x 10 11	664
208Bi19+	3,4	3,6 x 10 10	213

transmision efficiency(source to extract beam)
typical: 35% - **best:** 60%
tranverse emmitance
emmitance definition:
vertical: 40π mm mrad
horizontal: 80π mm mrad
longitudinal: 1 %(Δ) E/E)%xdeg RF

USES
basic research: 70% **therapy:** %
development: 8% **isotope production:** %
other: 12% **maintenance:** 9%
beam tuning: 1% **Total Time:** 5000h/year

TECHNICAL DATA
a)magnet: **type:** compact
Kb: MeV/A **Kf:** MeV/A
average field (min/max): 21.1/ 1.98 T
number of magnet sectors: 4
hill angular width: 45hill angular width
spiral (max): 0 deg
pole parameters
diameter: 4 m
injection radius: 0,05 m
extraction radius: 1,2 - 1,8 m
hill gap: 0,042m **valley gap:** 0,3m
trim coils
-number: 10x2
-current(max): 500 A A-turns
harmonic coils
-number: 4xNsectorsx2
-current(max): 500 A A-turns
main coils
number: 1x2
total ampere-turns: A-turns
current: 2500 A
stored energy: MJ
weight - iron: 2100t coils: t
power
main coils (total): 850 kW
trim coils (total max): 56 kW
refrigerator (cryogenic): kW
b)RF
acceleration
frequency range: 5,42-12,2MHz
harmonic modes: 2
number of dees: 2
number of cavities: 2
dee angular width: 42degrees
voltage
at injection: 25kV(peak to ground, max)
at extraction: kV(peak to ground, max)
peak: 80kV(peak to ground, max)
line power(max): 140kW
stability
phase: deg
voltage: %
injection
c)ion source: ECR4M
external injection: axial
components: selenoids
source bias voltage: 0,2kV
injection energy: MeV/N
buncher: linear, since
injection efficiency: 20-60%
d)injector:
e)extraction
Stripping foil
efficiency
typical: 25-100%
best: %
f)vacuum
pumps: 5 oil pumps with nitrogen traps
achieved vacuum: 2,7 x 10 -Pa
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