

ENTRY NO: C-31
Machine Name: U-400M
Date: 9/3/01 7:01:52 AM
Institution: FLNR JINR
Address 141980 Moscow region, Dubna, Joliot Curie 6, Russi
In Charge of Cyclotron: Yu. Ts. Oganessian
Telephone: +7 (09621) 62261
Fax: +7 (09621) 65083
Person Reporting: G. G. Gulbekian
Web: www.jinr.ru
E-mail: post@flnr.jinr.ru

HISTORY

Designed By: FLNR JINR
Construction Dates: 1987-1990
First Beam Date: 1991

CHARACTERISTIC BEAMS

ions	/ energy(MeV/N)/current(pps)/power(w)
7 Li 2+	35 6*10 13
11 B 3+	32 4*10 13
12 C 4+	47 4*10 13
18 O 5+	33 2.5*10 13
36 S 10+	33 6*10 11
40 Ar 12+	40 7*10 11

transmission efficiency(source to extract beam)

typical: 20% - **best:** %

tranverse emittance

emittance definition:

vertical: 17π mm mrad

horizontal: 50π mm mrad

longitudinal: 0.5%(Δ) E/E)%xdeg RF

USES

basic research: 60%

therapy: %

development: 20%

isotope production: %

other: %

maintenance: 10%

beam tuning: 10%

Total Time: 3000h/year

TECHNICAL DATA

a)magnet: **type:** compact

Kb: MeV/A **Kf:** MeV/A

average field (min/max): 1.95 T

number of magnet sectors: 4

hill angular width: 45hill angular width

spiral (max): 40 deg deg

pole parameters

diameter: 4 m

injection radius: m

extraction radius: 1.75 m

hill gap: 0.1m **valley gap:** 0.5m

trim coils

-number: 15x2

-current(max): A-turns

harmonic coils

-number: 5xNsectorsx2

-current(max): A-turns

main coils

number: 1x2

total ampere-turns: 1.26*10 6 A-turns

current: 2500 A

stored energy: MJ

weight - iron: 2100t **coils:** 115t

power

main coils (total): 750 kW

trim coils (total max): 120 kW

refrigerator (cryogenic): kW

b)RF

acceleration

frequency range: 15 - 25MHz

harmonic modes: 2;4

number of dees: 4

number of cavities: 4

dee angular width: degrees

voltage

at injection: kV(peak to ground, max)

at extraction: kV(peak to ground, max)

peak: 150kV(peak to ground, max)

line power(max): 4x100kW

stability

phase: deg

voltage: 0.1%

injection

c)ion source: ECR DECRIS14-2

external injection: axial

components:

source bias voltage: kV

injection energy: MeV/N

buncher: sine

injection efficiency: 20%

d)injector:

e)extraction

Stripping foil

efficiency

typical: 70%

best: %

f)vacuum

pumps: 6 oil pumps with nitrogen traps

achieved vacuum: 4*10-5Pa

REFERENCES

1. Entry NC44 in Proc. of the 13th Int. Conf., Cyclotrons and Their Application, Vancouver, 1992, p.822 2. B.Gikal, G.Gulbekian, V.Kutner in Proc. of Int. Conf., Cyclotrons and Their Application, Caen, 1998, pp. 587-591

EXPERIMENTAL FACILITIES

COMBAS, FOBOS, ACCULINNA

COMMENTS