

ENTRY NO: C-48
Machine Name: K1200
Date: 5/10/01 5:47:17 PM
Institution: Michigan State University
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HISTORY

Designed By: Michigan State University 1976-86
Construction Dates: 80-87
First Beam Date: 6/88; Coupled Cyc. 10/2000

CHARACTERISTIC BEAMS

ions	/ energy(MeV/N)/current(pps)/power(w)
18O 8+	120 * *
40Ar 18+	140 * *
78Kr	140 * *
86Kr	140 * *
136Xe	110 * *
197Au	90 * *

transmission efficiency(source to extract beam)

typical: *% - best: 1%

transverse emittance

emittance definition:

vertical: $*\pi$ mm mrad

horizontal: $*\pi$ mm mrad

longitudinal: $*(\Delta) E/E$ %xdeg RF

USES

basic research: *%

therapy: *%

development: *%

isotope production: *%

other: *%

maintenance: *%

beam tuning: *%

Total Time: *h/year

TECHNICAL DATA

a)magnet: type: compact

Kb: 1200MeV/A Kf: 400MeV/A

average field (min/max): 3.0 - 5.3 T

number of magnet sectors: 3

hill angular width: hill angular width

spiral (max): 170 deg

pole parameters

diameter: 2.197 m

injection radius: .32 m

extraction radius: 1.03 m

hill gap: 0.076m valley gap: 0.914m

trim coils

-number: (21x3)+1x2

-current(max): 400x20/2 A-turns

harmonic coils

-number: 2xNsectorsx2

-current(max): 400x20/2 A-turns

main coils

number: 2x2

total ampere-turns: 7 e6 A-turns

current: 900 A

stored energy: 60MJ

weight - iron: 240t coils: 20t

power

main coils (total): 0 kW

trim coils (total max): 100 kW

refrigerator (cryogenic): 1300 kW

b)RF

acceleration

frequency range: 9-27MHz

harmonic modes: 1

number of dees: 3

number of cavities: 3

dee angular width: 60degrees

voltage

at injection: 150kV(peak to ground, max)

at extraction: 169kV(peak to ground, max)

peak: 169kV(peak to ground, max)

line power(max): 920kW

stability

phase: 1 deg

voltage: .01%

injection

c)ion source: ECR

external injection: radial

components: K500 cyc., internal stripper foil

source bias voltage: 30kV

injection energy: approx. Efinal/11MeV/N

buncher: none

injection efficiency: 60%

d)injector: K500 Cyclotron

e)extraction

electrostatic deflectors (2) 6mm gap, 130 kV/cm movable

passive magnetic dipole and 2 compensators movable focusing

bars (8) and compensators (6) precessional

efficiency

typical: *%

best: 75%

f)vacuum

pumps: 2 cryopanel, 7K, Cu+charcoal, 2500 l/s/panel, 2 t

achieved vacuum: 9.3e-5Pa

REFERENCES

MSU Reports MSUCP 29 (June 80) and MSUCP35 (June 81)

MSUCP-939 (July 94) "The K500 x K1200" Proc. 11th Int.

Conf. on Cyclotrons (1986)157

EXPERIMENTAL FACILITIES

Magnetic spectrometer S800, fragment separator A1900, 4 pi

array, 92 inch Chamber, Reaction Products Mass Separator,

Superball (neutron detector), Neutron wall, Germanium

detector array, Gas stopping target, sweeper magnet.

COMMENTS