

ENTRY NO: C46
Date: 03 Feb 2005 12:58:44
Machine Name: Harper Hospital / Gershenson Radiation
Oncology Center Cyclotron
Institution: Karmanos Cancer Institute
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Person in Charge of Cyclotron: Mark Yudlev, Emanuel
Blosser
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History

Designed by: Henry Blosser
Construction Dates: 1984 - 1992
First Beam Date: April 1989
Characteristic Beams
ions / energy(MeV/N)/current(pps)/power(w)
deutrons 48.5 15 uA 750
Transmission Efficiency (source to extracted beam)

Typical (%):

Best (%):

Emittance

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

USES

Basic Research (%): 10
Development (%):
Therapy (%): 80
Isotope Production (%):
Other Application (%):
Maintenance (%): 10
Beam Tuning (%):
Total Time (h/year): 2750

TECHNICAL DATA

(a)Magnet

Type: superconducting
Kb (MeV): K100
Kf (MeV):
Average Field (min./max. T): 4.5
Number of Sectors: 3
Hill Angular Width (deg.):
Spiral (deg.):
Pole Diameter (m): 0.3
Injection Radius (m):
Extraction Radius (m):
Hill Gap (m): 0.038
Valley Gap (m): 0.406

Trim Coils

Number: x2
Maximum Current (A-turns):

Harmonic Coils

Number: xNsectorsx2
Maximum Current (A-turns):

Main Coils

Number: 1x2
Total Ampere Turns: 963,641
Maximum Current (A): 203

Stored Energy (MJ): 2.0

Total Iron Weight (tons): 24

Total Coil Weight (tons): 0.76

Power

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

(b)RF

Acceleration

Frequency Range (MHz): 105 only

Harmonic Modes: 1/3

Number of Dees: 3

Number of Cavities: 1

Dee Angular Width (deg.):

Voltage

At Injection (peak to ground, KV):

At Extraction (peak to ground, KV):

Peak (peak to ground, KV):

Line Power (max, KW):

Phase Stability (deg.):

Voltage Stability (%):

(c)Injection

Ion Source: cold cathode

Source Bias Voltage (kV):

External Injection:

Buncher Type:

Injection Energy (MeV/n):

Component:

Injection Efficiency (%):

Injector:

(d)Extraction

Elements, Characteristic:

Typical Efficiency (%):

Best Efficiency (%):

(e)Vacuum

Pumps: turbo molecular

Achieved Vacuum (Pa):

REFERENCES

EXPERIMENTAL FACILITIES

COMMENTS