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History

Designed by: TCC, The Cyclotron Corporation, CP42H
Construction Dates: 1979 - 1982
First Beam Date: 1983
Characteristic Beams
ions / energy(MeV/N)/current(pps)/power(w)
p 42 1.25 E15 8400

Transmission Efficiency (source to extracted beam)

Typical (%): 80
Best (%): 90

Emittance

Emittance Definition: 90%
Vertical (pi mm mrad): 10
Horizontal (pi mm mrad): 10
Longitudinal (dE/E[%] x RF[deg.]):

USES

Basic Research (%): 15
Development (%): 5
Therapy (%):
Isotope Production (%): 60
Other Application (%): 15
Maintenance (%): 5
Beam Tuning (%):
Total Time (h/year): ca. 5000

TECHNICAL DATA

(a)Magnet

Type: compacct
Kb (MeV): 42
Kf (MeV):
Average Field (min./max. T): 1.84
Number of Sectors: 3
Hill Angular Width (deg.):
Spiral (deg.): 64
Pole Diameter (m): 1.20
Injection Radius (m):
Extraction Radius (m): 0.53
Hill Gap (m): 0.05
Valley Gap (m): 0.12
Trim Coils
Number: x2
Maximum Current (A-turns):
Harmonic Coils
Number: 2xNsectorsx2
Maximum Current (A-turns):
Main Coils
Number: 1x2
Total Ampere Turns: 184000
Maximum Current (A): 365
Stored Energy (MJ):
Total Iron Weight (tons): 35
Total Coil Weight (tons): 3
Power
Main Coils (total KW): 100
Trim Coils (total, maximum, KW):
Refrigerator (cryogenic, KW):

(b)RF

Acceleration

Frequency Range (MHz): 26.5
Harmonic Modes: 1
Number of Dees: 1
Number of Cavities:
Dee Angular Width (deg.):90
Voltage
At Injection (peak to ground, KV):
At Extraction (peak to ground, KV):
Peak (peak to ground, KV): 35
Line Power (max, KW): 100
Phase Stability (deg.):
Voltage Stability (%): 0.01

(c)Injection

Ion Source: internal cold cathode penning
Source Bias Voltage (kV): 1.200
External Injection:
Buncher Type:
Injection Energy (MeV/n):
Component:
Injection Efficiency (%):
Injector:

(d)Extraction

Elements, Characteristic: Charge exchange Foil efficiency
Typical Efficiency (%): 80
Best Efficiency (%): 90

(e)Vacuum

Pumps: 4 diffusion pumps
Achieved Vacuum (Pa): 1.33*E10-5

REFERENCES

EXPERIMENTAL FACILITIES

COMMENTS