

ENTRY NO:C42
Date: 04 Apr 2005 08:54:10
Machine Name: PSI Injector 2 Cyclotron
Institution: Paul Scherrer Institute
Address: CH-5232 Villigen PSI, Switzerland
Telephone: ++41-56-310 33 93
Fax: ++41-56-310 33 83
Web Address: www.psi.ch
Person in Charge of Cyclotron: Pierre A. Schmelzbach,
Stefan Adam
Person Reporting Information: Stefan Adam
E-mail Address: stefan.adam@psi.ch

History

Designed by: PSI
Construction Dates: 1978-83
First Beam Date: 1984
Characteristic Beams
p, 72 MeV, 2.2 mA, 160 kW
Transmission Efficiency (source to extracted beam)
Typical (%):
Best (%):
Emittance
Emittance Definition: rms
Vertical (pi mm mrad): 1
Horizontal (pi mm mrad): 1
Longitudinal (dE/E[%] x RF[deg.]): 0.1

USES

Basic Research (%): 75
Development (%): 10
Therapy (%): parasitic
Isotope Production (%): parasitic
Other Application (%):
Maintenance (%): 9
Beam Tuning (%): 5
Total Time (h/year): 6000

TECHNICAL DATA

(a)Magnet

Type: separated sectors
Kb (MeV): 72
Kf (MeV): 72
Average Field (min./max. T): 0.33-0.36
Number of Sectors: 4
Hill Angular Width (deg.): 27
Spiral (deg.): 0
Pole Diameter (m): 7
Injection Radius (m): 0.44
Extraction Radius (m): 3.3
Hill Gap (m): 0.035
Valley Gap (m):
Trim Coils
Number: 2 x 11
Maximum Current (A-turns): 40 A
Harmonic Coils
Number: 2 x 4
Maximum Current (A-turns): 200 A
Main Coils
Number: 4 x 2
Total Ampere Turns: 3.4 e4
Maximum Current (A): 400
Stored Energy (MJ):
Total Iron Weight (tons): 4 x 180
Total Coil Weight (tons): 4 x 0.96
Power
Main Coils (total KW):
Trim Coils (total, maximum, KW):
Refrigerator (cryogenic, KW):

(b)RF

Acceleration

Frequency Range (MHz): 50.633
Harmonic Modes: 10
Number of Dees:

Number of Cavities: 2 + 2 flattop used for acc.

Dee Angular Width (deg.):

Voltage

At Injection (peak to ground, KV): 125
At Extraction (peak to ground, KV): 250
Peak (peak to ground, KV):
Line Power (max, KW): 2 x 180
Phase Stability (deg.): 0.01
Voltage Stability (%): 0.03

(c)Injection

Ion Source: Multiscusp
Source Bias Voltage (kV): 60
External Injection: radial, conical injection shin
Buncher Type: sinus, 2 gap
Injection Energy (MeV/n): 0.870
Component:
Injection Efficiency (%): 20
Injector: Cockcroft-Walton

(d)Extraction

Elements, Characteristic: el. stat channel, septum magnet
Typical Efficiency (%): 99.97
Best Efficiency (%):

(e)Vacuum

Pumps: turbopumps
Achieved Vacuum (Pa): 1.3 e-4

REFERENCES Contributions to these Proceedings by
H.R.Fitze, A. Adelman, A. Mezger

EXPERIMENTAL FACILITIES

Injector for the PSI Ring Cyclotron Isotope production with
splitted beam

COMMENTS