

ENTRY NO: CU22

Date: 16 Mar 2005 11:57:40

Machine Name: GE PETtrace

Institution: University of Cambridge

Address: Wolfson Brain Imaging Centre, Addenbrooke's Hospital

Telephone: +44 1223 33 18 20

Fax: +44 1223 33 18 26

Web Address: www.wbic.cam.ac.uk

Person in Charge of Cyclotron: Paul Burke/John Clark

Person Reporting Information: John Clark

E-mail Address: jcc24@wbic.cam.ac.uk

History

Designed by: Scanditronix/GE (Stig Lindback)

Construction Dates: delivered aug 1995 prior to building completion

First Beam Date: Oct 1995

Characteristic Beams

H+ 16 (MeV) 100 (microA)

D+ 8.5 (MeV) 40 (microA)

Transmission Efficiency (source to extracted beam)

Typical (%): 70 (protons)

Best (%): 80

Emittance

Emittance Definition:

Vertical (pi mm mrad):

Horizontal (pi mm mrad):

Longitudinal (dE/E[%] x RF[deg.]):

USES

Basic Research (%):

Development (%): 5

Therapy (%):

Isotope Production (%): 90

Other Application (%):

Maintenance (%): 5

Beam Tuning (%):

Total Time (h/year): 2700

TECHNICAL DATA

(a)Magnet

Type:

Kb (MeV):

Kf (MeV):

Average Field (min./max. T): 1.8

Number of Sectors:

Hill Angular Width (deg.):

Spiral (deg.):

Pole Diameter (m):

Injection Radius (m): 0

Extraction Radius (m): 0.32

Hill Gap (m): 0.06

Valley Gap (m): 0.116

Trim Coils

Number: none

Maximum Current (A-turns):

Harmonic Coils

Number: none

Maximum Current (A-turns):

Main Coils

Number: x2

Total Ampere Turns: 178000

Maximum Current (A): 441 for deuteron

Stored Energy (MJ):

Total Iron Weight (tons): 17.7

Total Coil Weight (tons): 1.8

Power

Main Coils (total KW): 33

Trim Coils (total, maximum, KW):

Refrigerator (cryogenic, KW):

(b)RF

Acceleration

Frequency Range (MHz): 27.2 – 27.8

Harmonic Modes: 1 for proton, 2 for deuteron

Number of Dees: 2

Number of Cavities: 1

Dee Angular Width (deg.): 76

Voltage

At Injection (peak to ground, KV):

At Extraction (peak to ground, KV):

Peak (peak to ground, KV): 42

Line Power (max, KW): 12

Phase Stability (deg.):

Voltage Stability (%): < 1

(c)Injection

Ion Source:

Source Bias Voltage (kV):

External Injection:

Buncher Type:

Injection Energy (MeV/n):

Component:

Injection Efficiency (%):

Injector:

(d)Extraction

Elements, Characteristic: dual beam possible using twin stripper assemblies but not used

Typical Efficiency (%):

Best Efficiency (%):

(e)Vacuum

Pumps:

Achieved Vacuum (Pa): 6×10^{-5}

REFERENCES

EXPERIMENTAL FACILITIES

6 target positions for PET radionuclides 11-C, 18-F 15-O and 13N. Solid target station for eg 64-Cu

COMMENTS

Installation of IBA cyclone 3D is nearing completion

