

ENTRY NO:C02

Date: 14 Feb 2005 09:29:41

Machine Name: CYCLONE 44

Institution: UCL, Centre de Recherches du Cyclotron

Address: 2, Chemin du Cyclotron 1348 Louvain-la-Neuve
Belgium

Telephone: +32(10)472998

Fax: +32(10)452183

Web Address: <http://www.cyc.ucl.ac.be>

Person in Charge of Cyclotron: Guido Ryckewaert

Person Reporting Information: Guido Ryckewaert

E-mail Address: guido.ryckewaert@cyc.ucl.ac.be

History

Designed by: UCL

Construction Dates: 1995-1998

First Beam Date: June 1998

Characteristic Beams

Radioactive ions, 0.4-0.8 MeV/n, 10exp11 pps

Transmission Efficiency (source to extracted beam)

Typical (%): 5

Best (%): 10

Emittance

Emittance Definition: RMS

Vertical (pi mm mrad): 24

Horizontal (pi mm mrad): 13

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

USES

Basic Research (%): 76

Development (%): 24

Therapy (%):

Isotope Production (%):

Other Application (%):

Maintenance (%):

Beam Tuning (%):

Total Time (h/year): 675 (in 2003)

TECHNICAL DATA

(a)Magnet

Type: Compact

Kb (MeV): 44

Kf (MeV): 2.0

Average Field (min./max. T): 0.8-1.54

Number of Sectors: 4

Hill Angular Width (deg.): 60-65

Spiral (deg.): -

Pole Diameter (m): 1.56

Injection Radius (m):

Extraction Radius (m): 0.633

Hill Gap (m): 0.12

Valley Gap (m): 0.24

Trim Coils

Number: 12 X 2 (for upper and lower poles)

Maximum Current (A): 20

Harmonic Coils

Number: 2 X 4 (sectors) X 2 (for upper and lower poles)

Maximum Current (A): 10

Main Coils

Number: 1 X 2 (for upper and lower poles)

Total Ampere Turns: 210000

Maximum Current (A): 500

Stored Energy (MJ):

Total Iron Weight (tons): 56

Total Coil Weight (tons): 2

Power

Main Coils (total KW): 52

Trim Coils (total, maximum, KW): 1

Refrigerator (cryogenic, KW):

(b)RF

Acceleration

Frequency Range (MHz): 13.3-17.5

Harmonic Modes: 5, 6

Number of Dees: 2

Number of Cavities: 2

Dee Angular Width (deg.): 22

Voltage

At Injection (peak to ground, KV): 20

At Extraction (peak to ground, KV): 20

Peak (peak to ground, KV): 20

Line Power (max, KW): 2

Phase Stability (deg.): 0.1

Voltage Stability (%): 0.01

(c)Injection

Ion Source: ECR

Source Bias Voltage (kV): 7-20

External Injection: axial

Buncher Type: double gap sinusoidal

Injection Energy (MeV/n): variable

Component:

Injection Efficiency (%): 20

Injector:

(d)Extraction

Elements, Characteristic: electrostatic deflector

passive magnetic focusing channel

Typical Efficiency (%): 50

Best Efficiency (%): 65

(e)Vacuum

Pumps: Turbopumps + Cryopumps

Achieved Vacuum (Pa): 10⁻⁵

REFERENCES

EXPERIMENTAL FACILITIES

ARES (Astrophysics Recoil Separator)

COMMENTS