

ENTRY NO: C29
Date: 15 Feb 2005 10:12:53
Machine Name: U-200P
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History

Designed by: Designed based on Dubna U-200 cyclotron modified and put into operation by the Heavy Ion Laboratory staff

Construction Dates: 1988-1992

First Beam Date: Nov. 1993 (internal beam),

Apr. 1994 (extracted beam)

Characteristic Beams

Ion / Energy [MeV] / Extracted current [enA]

11B+2 55 20

12C+3 112 80

16O+3 80 1400

20Ne+5 190 100

40Ar+7 172 40

Transmission Efficiency (source to extracted beam)

Typical (%): 2%

Best (%): 17%

Emittance

Emittance Definition: RMS

Vertical (pi mm mrad): ~32

Horizontal (pi mm mrad): ~34

Longitudinal (dE/E[%] x RF[deg.]): 1% x 30 deg.
(harmonic number dependent)

USES

Basic Research (%): 75

Development (%): 10

Therapy (%):

Isotope Production (%):

Other Application (%):

Maintenance (%): 10

Beam Tuning (%): 5

Total Time (h/year): ~3000

TECHNICAL DATA

(a)Magnet

Type: compact

Kb (MeV): max. 160

Kf (MeV): 35

Average Field (min./max. T): 1.7 / 2.7

Number of Sectors: 4

Hill Angular Width (deg.): 42

Spiral (deg.):

Pole Diameter (m): 2

Injection Radius (m): 0.04

Extraction Radius (m): 0.60 - 0.86

Hill Gap (m): 0.026

Valley Gap (m): 0.15

Trim Coils

Number: 10

Maximum Current (A-turns): 600

Harmonic Coils

Number:

Maximum Current (A-turns):

Main Coils

Number: 1

Total Ampere Turns: 546000

Maximum Current (A): 1200

Stored Energy (MJ):

Total Iron Weight (tons): 240

Total Coil Weight (tons):

Power

Main Coils (total KW): 300

Trim Coils (total, maximum, KW): 30

Refrigerator (cryogenic, KW): 3 x 5.5

(b)RF

Acceleration

Frequency Range (MHz): 12 - 20

Harmonic Modes: 1, 2, 3, 4, 5, 6

Number of Dees: 2

Number of Cavities: 2

Dee Angular Width (deg.): 45

Voltage

At Injection (peak to ground, KV): 70

At Extraction (peak to ground, KV): 67

Peak (peak to ground, KV): 70

Line Power (max, KW): 60

Phase Stability (deg.): 1

Voltage Stability (%): 1.4

(c)Injection

Ion Source: ECR

Source Bias Voltage (kV): 11

External Injection: axial

Buncher Type: sine wave

Injection Energy (MeV/n): beam dependent

Component:

Injection Efficiency (%): 70

Injector: electrostatic mirror

(d)Extraction

Elements, Characteristic: stripper, adjustable

Typical Efficiency (%): beam and charge state dependent

Best Efficiency (%): 87

(e)Vacuum

Pumps: cryogenic

Achieved Vacuum (Pa): 0.000133

EXPERIMENTAL FACILITIES

FINUPHY, Handbook on Interdisciplinary Use of European Nuclear Physics Facilities, 2004, pp. 163-172

EXPERIMENTAL FACILITIES

- "JANOSIK", a multidetector system to study Giant Dipole Resonances.

- "OSIRIS II", a ball consisting of 12 BGO-shielded high-purity Ge detectors.

- "CUDAC", Coulomb Excitation chamber equipped with an array of silicon detectors-PIN diodes.

- "IGISOL", Scandinavian-type ion guide separator on-line.

- Large universal 80 cm scattering chamber, "SYRENA".

- Internal and external irradiation chambers for material research with target cooling possibilities.

COMMENTS

