

ENTRY NO: CU-2
Machine Name: CGR-MeV
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HISTORY

Designed By: CGR-MeV, France
Construction Dates: 1976 - 1981
First Beam Date: 1977

CHARACTERISTIC BEAMS

ions	/ energy(MeV/N)	/current(pps)	/power(w)
p	2.5 - 24	1E14	600
d	1.5 - 7.3	1E14	400
3He	2 - 10.7	1E14	200
4He	2.5 - 6.8	1E14	200

transmission efficiency(source to extract beam)

typical: 10% - best: 20%

transverse emittance

emittance definition:

vertical: π mm mrad

horizontal: π mm mrad

longitudinal: $(\Delta) E/E$ %xdeg RF

USES

basic research: 40% **therapy:** %
development: % **isotope production:** 60%
other: % **maintenance:** %
beam tuning: % **Total Time:** 700h/year

TECHNICAL DATA

a)magnet: **type:** compact
Kb: MeV/A **Kf:** MeV/A
average field (min/max): < 1.5 T
number of magnet sectors: 4
hill angular width: hill angular width
spiral (max): deg
pole parameters
diameter: 1.2 m
injection radius: m
extraction radius: 0.525 m
hill gap: 0.086m **valley gap:** 0.14m
trim coils
 -number: 7x2
 -current(max): A-turns
harmonic coils
 -number: 1xNsectorsx2
 -current(max): A-turns
main coils
number: 1x2
total ampere-turns: 150000 A-turns
current: 1100 A
stored energy: MJ
weight - iron: 28t coils: t
power
main coils (total): 65 kW
trim coils (total max): 10 kW
refrigerator (cryogenic): kW
b)RF
acceleration

frequency range: 20 - 40MHz
harmonic modes: 2, 3, 4
number of dees: 2
number of cavities: 2
dee angular width: 50degrees
voltage
 at injection: 30kV(peak to ground, max)
 at extraction: kV(peak to ground, max)
 peak: kV(peak to ground, max)
line power(max): 30kW
stability
phase: 0.2 deg
voltage: 0.05%
injection
c)ion source: Livinstone-Jones
external injection: axial
components:
source bias voltage: kV
injection energy: MeV/N
buncher:
injection efficiency: %
d)injector:
e)extraction
 Electrostatic, 50 kV
efficiency
typical: 50%
best: 60%

f)vacuum

pumps: oil diffusion Balzers 3 m3/s

achieved vacuum: 1E-4Pa

REFERENCES

APPLICATIONS (1995) CPA: <http://www.admin.rug.ac.be/Onderzoeksbeleid/techno/english/wetens/WE08VE.htm>
 PET: <http://www.admin.rug.ac.be/Onderzoeksbeleid/techno/english/geneesk/GE01VG.htm> PIXE: <http://www.admin.rug.ac.be/Onderzoeksbeleid/techno/english/wetens/WE08VD.htm> carrier free tracers: <http://www.admin.rug.ac.be/Onderzoeksbeleid/techno/english/wetens/WE08VB.htm> Update 'research at the RUG' under construction: <http://www.admin.rug.ac.be/Onderzoeksbeleid/techno/english/index.htm>

EXPERIMENTAL FACILITIES

cyclotron: 7 beam lines in 5 vaults isocentric neutron therapy unit d(14.5)+Be 0.18 Gy/min fast neutron beam 2E12 neutrons/s/cm2 radiochemical labs & 5 hot-cells positron emission tomography (PET) scanner: Siemens 951/31 on-line production of 15O-gases batch production of 11C, 13N, 18F, 55Co, ... labelled molecules batch production of 18FDG and 81Rb/81mKr generator proton induced X-ray emission (PIXE) analysis set-up radiation measurements: Ge & NaI spectrometry, gamma-gamma coincidence, ionisation chamber, ... radiochromatography

COMMENTS

