Entry: C 46 Date: 4 June 1998
Machine Name: C-30 Institution: The Andrzej Sołtan Institute for Nuclear Studies
Address: 05-400 Swierk, POLAND
In Charge of the cyclotron: J.Wojtkowska (Rep. by E.PLAWSKI and J.SURA)
Tel: 048 22 779 8138 Web:
Fax: 048 22 779 3481 E-mail: plawski@cx1.cyf.gov.pl

HISTORY
Design by: 1983
Construction time: 6 year
First beam: 1989 (1991 full energy)
CHARACTERISTIC BEAMS
ions / energy (MeV/n) / current (pps) / power (W) :
- $H^- \rightarrow$ protons 28 MeV 1μA extracted average
- protons 30 MeV 10 μA internal average
-
transmission efficiency (total)
- typical: 20 % for H^- - best: .....%
transverse emittance (rms)
- vertical:.....π mmmrad
- horizontal:.....π mmmrad
longitudinal emittance (rms) .....ΔE/E.deg RF
USES
basic research: ..... 90 % therapy: ..... %
development: ..... % isotope production: ...10 %
other applications: ..... % maintenance:..... ■%
beam tuning: ..... %
total time: ~ 500 h/year
TECHNICAL DATA
a) magnet
type: compact
Kb: 30..... MeV/A Kf: 50 ..... MeV/A
average field (min-max): 1.8 (fixed).....T
number of magnet sectors: 4
- angle: 45^0.....deg
- spiral (max): 0..... deg
pole parameters
- diameter: 1.05..... m
- injection radius: ..... m
- extraction radius: 0.45 max..... m
hill gap: 0.02 min..... m valley gap: 0.10..... m
field trimming
- trim coils
- number: -
- current (max): -.....A
- harmonic coils
- number: -
- current (max): - ..... A
- others
- number: -
- current (max): - ..... A
main coils:
- number: 2
Ampere-turns: 164 000..... A .T.
- current: 300..... A
stored energy: ..... MJ
weight : - iron: 38 ..... t - coils: 1.38 ..... t
power
- main coils (total): 65 ..... kW
- trim coils (total max): - ..... kW
- refrigerator (cryogenic): - .....kW
b) RF
- acceleration
- frequency range: 52.78..... MHz
- harmonic modes: 2 .....
- number of dees: 2 (coupled in center).....
- angular aperture: 45 .....deg
- voltage: - average (min-max): 50 .....kV
- variation with radius: ..... ~ 5 %
- power in (max): 25 in pulse .....kW
- stability: - phase: ..... deg - voltage:.....%
- other cavities
- purpose: -.....
- frequency range: - .....MHz
- region of influence: - .....m
- voltage (max): - ..... kV
- power in (max): - .....kW
- stability:- phase: ..... deg - voltage:.... %
c) injection
- internal source: PIG .....
- external (radial/axial): axial planned for installation
- elements: Multicusp, einzell, 90^0 bend
4 quad, solenoid, steerings, spiral infl.
- source voltage: 18 ..... kV
- injection energy: 18 ..... MeV/n
- buncher: - .....
- injection efficiency: .....%
d) ion sources/injector
internal - PIG
external - Multicusp
e) extraction
- elements, characteristics:
- stripping on Al foil
-
- efficiency
- typical: 80 ..... % - best:.....%
f) vacuum
- pumps: 2 x 700 l/s oil diff. .....
- achieved vacuum: 2 x $10^{-4} \rightarrow 10^{-3}$ .....Pa
REFERENCES
1. Sura et al., IPJ 1982, Warszawa /1983/
2. IEEE Trans.Nucl.Sci., Vol. NS-32, 5 /1985/
3. 11-th Cycl.Conf., Tokyo, 76-79 /1986/
EXPERIMENTAL FACILITIES
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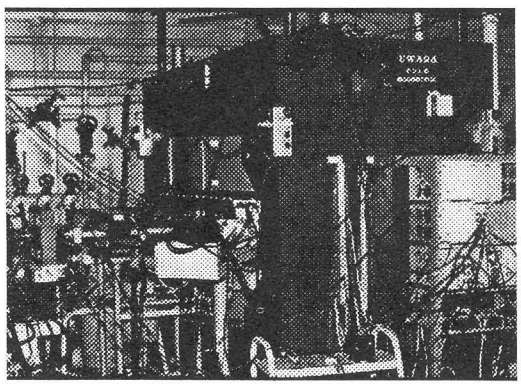
PLAN VIEW OF FACILITY



COMMENTS
Cyclotron RF is operated in pulsed mode.....
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