

ENTRY No. 73

NAME OF MACHINE U. 200 P. DATE
INSTITUTION Heavy Ion Laboratory at the Warsaw University
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IN CHARGE J. Jastrzebski REPORTED BY Cz. Weychert

HISTORY AND STATUS

DESIGN, date 1978 Model tests
ENG DESIGN, date
CONSTRUCTION, date
FIRST BEAM, date (or goal) 1992
MAJOR ALTERATIONS

COST, ACCELERATOR 3 Meg. \$
COST, FACILITY, total
FUNDED BY Min. of Education

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 15 ENGINEERS 14
TECHNICIANS 14 CRAFTS 12

GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION hr/wk, On target hr/wk
TIME DISTR. in house % , Outside %
BUDGET, op & dev
FUNDED BY

RESEARCH STAFF, not included above
USERS, in house outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET

POLE FACE, diameter (compact) 200 cm, R extraction 89 cm
R injection cm
GAP, min 2.7 cm, Field 27 kG }
max 15 cm, Field 17 kG } at
AVERAGE FIELD at R ext 21.4 kG } Ampere turns
B rmax / < B > 1.26

NUMBER OF SECTORS { compact 4 } Spiral, max 0 deg
separated 42
SECTOR ANGLE (SSC) 42 deg

TRIMMING COILS 20 circular
4-8 harmonic

CONDUCTOR, material and type Cu 24x24 mm hole 0.16

STORED ENERGY (cryogenic) MJ
POWER: main coils 240 max, kW; current stability 10^-4
trimming coils 60 max, kW; current stability 4x10^-4

WEIGHT: Fe 220 tons; coils 18 tons
COOLING system demineralized water

ION ENERGY (bending limit) E/A = 180 q^2/a^2 MeV/amu
(focusing limit) E/A = 48 q^2/a^2 MeV/amu

ACCELERATION SYSTEM

DEES, number 2; angle 45 deg
BEAM APERTURE 2.6 cm; DC Bias kV

TUNED by, coarse panel fine trimer
RF 12.3 to 21.4 MHz, stable ±

Orb F 4 to 21.4 MHz
HARMONICS, RF/Orb F, used 2, 3, 1, 4

DEE - Gnd, max 7.5 kV, min gap 10^-3 cm

STABILITY, (pk-pk noise)/(pk RF volt) 10^-3

ENERGY GAIN, max 270 kV/turn
RF PHASE, stable to ± 1 deg

RF POWER input, max 2x120 kW
FREQUENCY MODULATION, rate /s

modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 1x10^-6 Torr or ~~10^-6~~

PUMPS, No, Type, Size 4 oil dif. pumps
6000 l/s each, liquid nitr. traps
effect. speed of system 8000 l/s

ION SOURCES hot cathode Penning type and/or ECR

INJECTION SYSTEM

axial from the bottom or inside from the top

EXTRACTION SYSTEM

stripping or electrostatic deflektor

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 30 m^2; movable 900 m^2

TARGET STATIONS 7 in 6 rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type

COMPUTER model

OTHER FACILITIES energy monochromatization

2 x 120 deg. magnets

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
2 H+	30		100	
12 C+3	120		10	
40 Ar+8	280		1	

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED		CONDITIONS	
PULSE WIDTH	RF deg	pA of	MeV ions
PHASE EXC, max	RF deg	pA of	MeV ions
EXTRACT eff	%	pA of	MeV ions
RESOL ΔE/E	%	pA of	MeV ions

EMITTANCE

(π mm. mrad) { axial } pA of MeV ions
rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS .. SOLID STATES PHYSICS ..
BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS ..

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES,
COMMENTS