

ENTRY No. 41
 NAME OF MACHINE
 INSTITUTE Physics Department, Panjab University, Chandigarh. DATE Juli 1981
 ADDRESS Physics Department, Panjab University, Chandigarh-160014 INDIA
 TEL Prof. I. M. Govil TELEX Prof. I. M. Govil
 IN CHARGE REPORTED BY

HISTORY AND STATUS

DESIGN, date 1953 Model tests *
 ENG DESIGN, date 1953
 CONSTRUCTION, date 1965-70
 FIRST BEAM, date (or goal) 1971
 MAJOR ALTERATIONS Vacuum system and Cavity Coupling arrangement
 COST, ACCELERATOR 250,000
 COST, FACILITY, total 400,000
 FUNDED BY UGC, New Delhi-India & P.U. Chandigarh
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
 SCIENTISTS 4 ENGINEERS 4
 TECHNICIANS 5 CRAFTS 4
 GRAD STUDENTS involved during year 4
 OPERATED BY 1 Research staff or 2 Operators
 OPERATION 40 hr/wk, On target 40 hr/wk
 TIME DISTR. in house 50 % , Outside 50 %
 BUDGET, op & dev 20,000 per annum
 FUNDED BY UGC, New Delhi & Panjab University Chandigarh-India
RESEARCH STAFF, not included above
 USERS, in house 9 outside 6
 GRAD STUDENTS involved during year 4
 RESEARCH BUDGET, in house 15,000
 FUNDED BY UGC, New Delhi & Panjab University Chandigarh-India
MAGNET
 POLE FACE, diameter (compact) 66 cm, R extraction 28 cm
 R injection 0 cm
 GAP, min 16 cm, Field 14 kG }
 max 16 cm, Field 14 kG } at
 AVERAGE FIELD at R ext 14 kG } Ampere turns
 B max/
 NUMBER OF SECTORS {compact } Spiral, max .. deg
 {separated }
 SECTOR ANGLE (SSC) deg
 TRIMMING COILS
 CONDUCTOR, material and type
 STORED ENERGY (cryogenic) MJ
 POWER: main coils 40 max, kW ; current stability
 trimming coils max, kW ; current stability
 WEIGHT: Fe 20 tons ; coils tons
 COOLING system
 ION ENERGY (bending limit) E/A = 8 q²/a² MeV/amu
 (focusing limit) E/A = 8 q²/a² MeV/amu
ACCELERATION SYSTEM
 DEES, number 1 ; angle 180 deg
 BEAM APERTURE 2.54 cm ; DC Bias 10 kV
 TUNED by, coarse fine
 RF 10 to 20 MHz, stable ± 1/10⁵
 Orb F to MHz
 HARMONICS, RF/Orb F, used
 DEE - Gnd, max 40 kV, min gap 2.5 cm
 STABILITY, (pk-pk noise)/(pk RF volt)
 ENERGY GAIN, max 80 kV/turn
 RF PHASE, stable to ± deg
 RF POWER input, max 25 kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width
VACUUM SYSTEM
 OPERATING PRESSURE 2.10⁻⁵ mm of Hg Torr or mbar
 PUMPS, No, Type, Size 4 Diffusion pumps (15.3 cm)
 1 Diff. Pump 23 cm, 2 Kinney
 Rotary
ION SOURCES
 Hooded Arc Type

INJECTION SYSTEM

Pullers, attached to Dee

EXTRACTION SYSTEM

Electrostatic Deflector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 230 m²; movable 400 m²
 TARGET STATIONS 2 in 1 rooms
 STATIONS served at same time, max 1
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES 55 cc
 4096 Multichannel analyzer
 and associated electronics

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pμA)	
	Goal	Achieved	Internal	External
1H ⁺	2-7	2-5	15	6
2H ⁺	4	4	15	6
3H ⁺	4-11	5-10	2	0.4
4H ⁺	8	8	2	0.4

SECONDARY

(part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH RF deg μA of MeV ions
 PHASE EXC, max RF deg μA of MeV ions
 EXTRACT eff 40 % μA of MeV ions
 RESOL ΔE/E 0.2 % 0.1 μA of MeV ions
 EMITTANCE
 (π mm. mrad) { axial } μA of MeV ions
 { rad }

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 40 SOLID STATES PHYSICS 20
 BIOMEDICAL APPLICAT. 5 ISOTOPE PRODUCTIONS 10

REFERENCES/NOTES

*This cyclotron was built around 1953-54 at Univ. of Rochester, U.S.A. This has been shifted to modified and reinstalled at Chandigarh in 1971.

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

