ENTRY No. 13

NAME OF MACHINE ISOCHRONOUS CYCLOTRON U-120 M
INSTITUTION Institute of Nuclear Physics
ADDRESS PRAHA, Czechoslovakia
TEL ..... TELEX .....
IN CHARGE ..... REPORTED BY Pr. V.P. DZELEPOV

HISTORY AND STATUS

DESIGN, date 1969-71 ..... Model tests 1971-75 .....
ENG DESIGN, date .....
CONSTRUCTION, date 1972-75 .....
FIRST BEAM, date (or goal) 1976 .....
MAJOR ALTERATIONS .....
.....
COST, ACCELERATOR .....
COST, FACILITY, total .....
FUNDED BY .....

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ..... ENGINEERS .....
TECHNICIANS ..... CRAFTS .....
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) 120 cm, R extraction 52 cm
R injection ..... cm
GAP, min ..... 8.2 cm, Field ..... 20 kG
max .... 22 ... cm, Field ..... 16 kG } at 4.10^5 ...
AVERAGE FIELD at R ext ..... kG } Ampere turns
B max/ <B> .....
NUMBER OF SECTORS { compact 4 ..... / separated ..... } Spiral, max 7.0deg
SECTOR ANGLE (SSC) ..... deg
TRIMMING COILS .....
.....
CONDUCTOR, material and type .....
STORED ENERGY (cryogenic) ..... MJ
POWER : main coils .. 180 max, kW ; current stability .....
trimming coils ... 60 max, kW ; current stability .....
WEIGHT : Fe 117.5 ..... tons ; coils ..... 15 tons
COOLING system ... water .....
ION ENERGY (bending limit) E/A = ... q^2/a^2 MeV/amu
(focusing limit) E/A = ... q /a MeV/amu

ACCELERATION SYSTEM

DEES, number ..... 1 ..... ; angle 180deg
BEAM APERTURE .. 2 ..... cm ; DC Bias .... 0 ..... kV
TUNED by, coarse . MP ..... fine . VC, auto .....
RF ... 8.6 ..... to .... 26.5 . mHz, stable ± 10^{-5} .....
Orb F .8.8 ..... to .... 26.3 . mHz
HARMONICS, RF/Orb F, used .....
DEE - Gnd, max ... 50 kV, min gap ... 3 ..... cm
STABILITY, (pk-pk noise)/(pk RF volt) 10^{-3} .....
ENERGY GAIN, max ..... 100 ..... kV/turn
RF PHASE, stable to ± ..... deg
RF POWER input, max .... 150 ..... kW
FREQUENCY MODULATION, rate ..... /s
modulator, type .....
beam pulse, width .....

VACUUM SYSTEM

OPERATING PRESSURE ..... 10 μ Torr
PUMPS, No, Type, Size .....
. 3 . diffusion. pumps .....
.....

ION SOURCES

. Oak. Ridge . type .....

INJECTION SYSTEM

.....

EXTRACTION SYSTEM

Electrostatic .....

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed ..... m^2 ; movable ..... m^2
TARGET STATIONS ..... in ..... rooms
STATIONS served at same time, max .....
MAG SPECTROGRAPH, type .....
COMPUTER model .....
OTHER FACILITIES .....
.....
.....

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (μA) Internal	External
p	40.9		20-50	15-35
d	20.8			
α	41.6			
^{3}He	50			
SECONDARY				(part/s)

BEAM PROPERTIES

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

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS .. SOLID STATES PHYSICS ....
BIOMEDICAL APPLICAT. .... ISOTOPE PRODUCTIONS ....
.....
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REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS