ENTRY NO. 74
NAME OF MACHINE Mini Cyclotron Model 1710 (JSW)
INSTITUTION Brookhaven National Laboratory
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TEL 516-282-4587 TELEX
IN CHARGE A. P. Wolf REPORTED BY W. B. Jones (Physicist in charge of operation)

HISTORY AND STATUS
DESIGN, date 1981 Model tests 1981
ENG DESIGN, date
CONSTRUCTION, date 1981
FIRST BEAM, date (or goal) 1982
MAJOR ALTERATIONS None
COST, ACCELERATOR ~ 860,000
COST, FACILITY, total 1,100,000
FUNDED BY DOE

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 1 ENGINEERS
TECHNICIANS 3 CRAFTS
GRAD STUDENTS involved during year
OPERATED BY Research staff or X Operators
OPERATION 40 hr/wk. On target 20 hr./wk
TIME DISTR. in house 100 % Outside %
BUDGET, op & dev
FUNDED BY DOE-NIH

RESEARCH STAFF, not included above
USERS, in house 7 outside Variable
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY DOE-NIH

MAGNET
POLE FACE, diameter (compact) 105 cm, R extraction 42 cm
R injection cm
GAP, min 7 cm, Field 18.4 kG
min 13 cm, Field 12.4 kG at 1.3×10^5 Ampere turns
AVERAGE FIELD at R ext 15.4 kG
B max/ < B > 1.2
NUMBER OF SECTORS compact 4 Spiral, max 0 deg
separated
SECTOR ANGLE (SSC) deg
TRIMMING COILS 3
CONDUCTOR, material and type Cu Hollow
STORED ENERGY (cryogenic) MJ
POWER: main coils 60 max, kW; current stability $20/10^6$
trimming coils 3 max, kW; current stability
WEIGHT: Fe 35 tons; coils 1 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 2 45 deg
BEAM APERTURE 1 cm; DC Bias 0 kV
TUNED by, coarse MS fine MP
RF 43.5 to 47 mHz, stable ± $5/10^6$
Orb F 11.75 to 21.75 mHz
HARMONICS, RF/Orb F, used 2.4
DEE—Gnd, max 45 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max 180 kV/turn
RF PHASE, stable to ± deg
RF POWEP input, max kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM
OPERATING PRESSURE 1×10^{-5} Torr
PUMPS, No, Type, Size 1 - Turbo Molecular 1500 ℓ/sec

ION SOURCES

INJECTION SYSTEM
Hot Cathode Axial Source

EXTRACTION SYSTEM
Electrostatic and Magnetic Channel

FACILITIES FOR RESEARCH
SHIELDED AREA, fixed 60 m²; movable 0 m²
TARGET STATIONS 1 in 1
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
H	17	17	120	50
D	10	10	140	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	..... pμ A of ..... MeV .....

OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS ..... SOLID STATES PHYSICS.....
BIOMEDICAL APPLICAT....70%.. ISOTOPE PRODUCTIONS.....
Chemistry Research 30%

REFERENCES/NOTES
1)
2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.