ENTRY NO. 96

NAME OF MACHINE Texas A&M K500 Cyclotron
INSTITUTION Texas A&M University
ADDRESS College Station, Texas 77843
TEL (409) 845-1411 TELEX
IN CHARGE D. H. Youngblood REPORTED BY R. C. Rogers, B. Laune

HISTORY AND STATUS

DESIGN, date 1980 Model tests
ENG DESIGN, date 1981-1984
CONSTRUCTION, date 1982-1985
FIRST BEAM, date (or goal) 1985
MAJOR ALTERATIONS
COST, ACCELERATOR
COST, FACILITY, total 10,000,000
FUNDED BY Texas A&M University, Welch Foundation

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) 142 cm, R extraction 67 cm
R injection cm
GAP, min 6.35 cm, Field 58 kG
min 91.4 cm, Field 43 kG } at
AVERAGE FIELD at R ext 49 kG Ampere turns
B max/ < B >
NUMBER OF SECTORS { compact 3 / separated } Spiral, max 113.5 deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS 13
CONDUCTOR, material and type NbTi in Cu
STORED ENERGY (cryogenic) 22 MJ
POWER: main coils 0 max, kW; current stability
trimming coils 50 max, kW; current stability
WEIGHT: Fe 100 tons; coils 8 tons
COOLING system He bath
ION ENERGY (bending limit) E/A = 500 q^2/a^2 MEV/amu
(focusing limit) E/A = 160 q/a MeV/amu

ACCELERATION SYSTEM

DEES, number 3 53 deg
BEAM APERTURE 2.5 cm; DC Bias 0 kV
TUNED by, coarse sliding short fine VC
RF 9 to 32 mHz, stable ± 10^{-7}
Orb F 1.3 to 32 mHz
HARMONICS, RF/Orb F used 1, 2, 3, 4, 5, 7
DEE—Gnd, max 100 kV, min gap 1.0 cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max 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 Torr or mbar
PUMPS, No, Type, Size

ION SOURCES

Internal cold cathode

INJECTION SYSTEM

EXTRACTION SYSTEM

2 Electrostatic deflectors & Magnetic channels

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 720 m²; movable - m²
TARGET STATIONS 12 in 5 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type (1)
COMPUTER model
OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
$^{40}Ar^{18+}$	1200 (2)			
$^{84}Kr^{3+}$	2000 (2)			
$^{197}Au^{41+}$	1200 (2)			
α	320			
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 ISOTOPE PRODUCTIONS

REFERENCES/NOTES

1) See Texas A&M Variable Energy Cyclotron entry
2) Specifications for coupled mode operation

PLAN VIEW OF FACILITY, COMMENTS, ETC.

To be used as heavy-ion injector for Texas A&M Variable Energy cyclotron[1] and as stand-alone accelerator.