

ENTRY No. CU102

NAME OF MACHINE Medi-Physics Cyclotron DATE
INSTITUTION Medi-Physics, Inc.
ADDRESS 5855 Christie Ave, Emeryville, CA 94608 - USA
TEL TELE
IN CHARGE E.R. Russell REPORTED BY E.R. Russell

HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date
FIRST BEAM, date (for goal) Accepted 12/70
MAJOR ALTERATIONS None

COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY Medi-Physics, Inc.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 1 ENGINEERS
TECHNICIANS 5 CRAFTS

GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION 168 hr/wk, On target 120 hr/wk
TIME DISTR. in house 99 % , Outside 1 %
BUDGET, op & dev

FUNDED BY Medi-Physics, Inc.
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) .97 cm, R extraction 42 cm

R injection cm

GAP, min .5 cm, Field 21 kG }
max .10 cm, Field 13.5 kG } at 2×10^6

AVERAGE FIELD at R ext 16.5 kG } Ampere turns

B max/ < B > 1.22

NUMBER OF SECTORS { compact } Spiral, max deg
{ separated }

SECTOR ANGLE (SSC) deg

TRIMMING COILS Harmonic correction 1

CONDUCTOR, material and type

STORED ENERGY (cryogenic) MJ

POWER: main coils max, kW ; current stability 3×10^{-5}

trimming coils max, kW ; current stability

WEIGHT: Fe 19.5 tons ; coils tons

COOLING system

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

(focusing limit) E/A = q^2/a^2 MeV/amu

ACCELERATION SYSTEM

DEES, number 2 ; angle 90 deg

BEAM APERTURE 2 cm ; DC Bias 1.5 kV

TUNED by, coarse straps fine panel

RF 12 to 25 MHz, stable $\pm$

Orb F to MHz

HARMONICS, RF/Orb F, used

DEE - Gnd, max 30 kV, min gap cm

STABILITY, (pk-pk noise)/(pk RF volt)

ENERGY GAIN, max 100 kV/turn

RF PHASE, stable to $\pm$ deg

RF POWER input, max 70 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 cathode¹⁾

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic and magnetic channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 100 m² ; movable m²

TARGET STATIONS .8 In 1 rooms

STATIONS served at same time, max 1

MAG SPECTROGRAPH, type None

COMPUTER model None

OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (pA)	
	Goal	Achieved	Internal	External
p		.22	400	60
d		.12	400	100
³ He		.32	100	50

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 $\Delta E/E$ % 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 100.

REFERENCES/NOTES

1) IEEE Trans. Nucl. Sci. NS-14, 70-71 (1967)

2) IEEE Trans. Nucl. Sci. NS-16, 500-503 (1969)

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES,

COMMENTS

Designed by the Cyclotron Corporation.

* Data confirmed October, 1981.