

ENTRY NO. 48

NAME OF MACHINE Physitron
 INSTITUTION Nihon Medi-Physics Co., Ltd. Takarazuka Facility
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 IN CHARGE H. Tobiki REPORTED BY Y. Tanaka

HISTORY AND STATUS

DESIGN, date Model tests TCC CS-30
 ENG DESIGN, date
 CONSTRUCTION, date Jun.-Nov., 1980
 FIRST BEAM, date (or goal) Dec., 1980
 MAJOR ALTERATIONS Addition of Yoke Iron
Negative (P-) Acceleration to Positive (P+)
 COST, ACCELERATOR
 COST, FACILITY, total
 FUNDED BY Nihon Medi-Physics Co., Ltd.

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS 5
 TECHNICIANS 7 CRAFTS
 GRAD STUDENTS involved during year
 OPERATED BY Research staff or Operators
 OPERATION hr/wk. On target hr/wk
 TIME DISTR. in house 100 % , 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) 96 cm, R-extraction 42 cm
 R injection cm
 GAP, min cm, Field kG }
 max cm, Field kG } at
 AVERAGE FIELD at R ext 17.5 kG } Ampere turns
 B max / < B >

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 max kW: current stability
 trimming coils max kW: current stability
 WEIGHT: Fe tons: coils tons
 COOLING system
 ION ENERGY (Bending limit) E/A = q²/A² MeV/amu
 (Focusing limit) E/A = q/A MeV/amu

ACCELERATION SYSTEM

DEES, number 2 angle 90 deg
 BEAM APERTURE cm; DC Bias 1.5 kV
 TUNED by, coarse fine
 RF to MHz, stable ±
 Orb F to MHz
 HARMONICS, RF/Orb F, used
 DEE-Gnd, max kV, min gap cm
 STABILITY, (pk-pk noise)/(pk RF volt)
 ENERGY GAIN, max kV/turn
 RF PHASE, stable to ± deg
 RF POWER input, max. kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 5 x 10⁻⁶ Torr or mbar
 PUMPS, No, Type, Size 1 x 10" D. P. (Aux. 1 x 10" D. P.)
 1 x 4" D. P.

ION SOURCES

. PIG type

INJECTION SYSTEM**EXTRACTION SYSTEM**

. Deflector & Magnetic Channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m²; movable m²
 TARGET STATIONS 3 in 1 rooms
 STATIONS served at same time, max
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (µA)	
	Goal	Achieved	Internal	External
proton	<u>26</u>	<u>26</u>	<u>200</u>	<u>50</u>
SECONDARY			(part/s)	

BEAM PROPERTIES

MEASURED	CONDITIONS	
	INTERNAL	EXTERNAL
PULSE WIDTH RF deg	µA of MeV	ions
PHASE EXC. max RF deg	µA of MeV	ions
EXTRACT eff. %	µA of MeV	ions
RESOL ΔE/E %	µA of MeV	ions
EMITTANCE		

(π mm-mrad) axial µA of MeV
 rad

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
 BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

REFERENCES/NOTES

- 1)
- 2)

PLAN VIEW OF FACILITY, COMMENTS, ETC.