ENTRY NO. 14

NAME OF MACHINE MCC
INSTITUTION Accelaratorlaboratoriet vid Åbo Akademi
ADDRESS Porthansgatan 3-5 SF-20500 ÅBO 50 FINLAND
TEL 021-335133 TELEX
IN CHARGE S-O Heselius REPORTED BY Jan Arhippainen

HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date
CONSTRUCTION, date Dec. 1973 to Oct. 1974
FIRST BEAM, date (or goal) July 1974
MAJOR ALTERATIONS -
COST, ACCELERATOR 4×10^6 Fmk
COST, FACILITY, total
FUNDED BY Finnish Government

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS 1 ENGINEERS 1
TECHNICIANS 2 CRAFTS 1
GRAD STUDENTS involved during year 1
OPERATED BY - Research staff or 5 Operators
OPERATION 50 hr/wk. On target hr/wk
TIME DISTR. in house 60 % Outside 40 %
BUDGET, op & dev 160.000 Fmk
FUNDED BY Government

RESEARCH STAFF, not included above

USERS, in house 8 outside 10
GRAD STUDENTS involved during year 2
RESEARCH BUDGET, in house 200.000 Fmk
FUNDED BY Government

MAGNET

POLE FACE, diameter (compact) 103 cm, R extraction 46 cm
R injection - cm
GAP, min 7,2 cm, Field 16,5 kG
min 12 cm, Field 12,5 kG } at 12×10^6 Ampere turns
AVERAGE FIELD at R ext 14,5 kG
B max/ < B > 1,13
NUMBER OF SECTORS compact 3 / separated ... } Spiral, max 35 deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS 4
CONDUCTOR, material and type Cu tube
STORED ENERGY (cryogenic) MJ
POWER: main coils 35 max, kW; current stability 10^{-4}
trimming coils 1 max, kW; current stability 10
WEIGHT: Fe 24 tons; coils 1,2 tons
COOLING system Demineralised wather
ION ENERGY (bending limit) E/A = q^2/a^2 MEV/amu
(focusing limit) E/A = q/a MeV/amu

ACCELERATION SYSTEM

DEES, number 2 180/140 deg
BEAM APERTURE 1,9 cm; DC Bias - kV
TUNED by, coarse panels fine capacitors
RF 8,75 to 25,5 mHz, stable ± 10^{-5}
Orb F to mHz
HARMONICS, RF/Orb F, used first / third
DEE—Gnd, max 35 kV, min gap 1,3 cm
STABILITY, (pk-pk noise)/(pk RF volt) 0,001
ENERGY GAIN, max 120 kV/turn
RF PHASE, stable to ± 5 deg
RF POWEP input, max 180 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width 40

VACUUM SYSTEM

OPERATING PRESSURE 5×10^{-6} Torr ~~x xbar~~
PUMPS, No, Type, Size diffusion pumps 2 x 1200 l/s

ION SOURCES

Hot-Filament Livingston

INJECTION SYSTEM

EXTRACTION SYSTEM

Electrostatic Deflector

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 50 m²; movable 140 m²
TARGET STATIONS 3 in 2 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type
COMPUTER model PDP-11/10
OTHER FACILITIES Schattering Chamber

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (μA) Internal	External
p	18	19	120	60
d	10	10	100	60
^{4}He	20	21	100	50
^{3}He	24	29	100	50
SECONDARY		(part/s)		

BEAM PROPERTIES

MEASURED		CONDITIONS			
PULSE WIDTH	40 RF deg	20	pμ A of 6	MeV p	ions
PHASE EXC. max	RF deg		pμ A of	MeV	ions
EXTRACT eff	50 %		pμ A of	MeV	ions
RESOL ΔE/E	0,3 %	0,4	pμ A of 18	MeV p	ions
EMITTANCE (π mm. mrad)	axial		pμ A of	MeV	
	rad				

OPERATING PROGRAMS, time distribution in %

BASIC NUCLEAR PHYSICS 40 SOLID STATES PHYSICS -
BIOMEDICAL APPLICAT 30 ISOTOPE PRODUCTIONS 30

REFERENCES/NOTES

1) Proc 6th Intern. Cycl. Conf.,Vancouver (1972) Basargin,...
2) Am.Inst Phys.(1972)

PLAN VIEW OF FACILITY, COMMENTS, ETC.