

ENTRY No. 70

NAME OF MACHINE Oslo Cyclotron DATE
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HISTORY AND STATUS

DESIGN, date Model tests
ENG DESIGN, date Cyclotron model MC 35
CONSTRUCTION, date from Scanditronix AB
FIRST BEAM, date (or goal) 1979
MAJOR ALTERATIONS
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY Univ. of Oslo & Norw. Res. Council
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 6 ENGINEERS 2.1/2
TECHNICIANS CRAFTS
GRAD STUDENTS involved during year 4-6
OPERATED BY 1 Research staff or 1 Operators
OPERATION hr/wk, On target hr/wk
TIME DISTR. in house 100 % , Outside %
BUDGET, op & dev
FUNDED BY Univ. of Oslo & Res. Council
RESEARCH STAFF, not included above
USERS, in house outside 3
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY Univ. of Oslo & Res. Council
MAGNET
POLE FACE, diameter (compact) 130 cm, R extraction 50 cm
R injection cm
GAP, min 10 cm, Field kG
max 18 cm, Field kG at
AVERAGE FIELD at R ext kG Ampere turns
B max/ <B>
NUMBER OF SECTORS {compact 3} Spiral, max 50 deg
{separated}
SECTOR ANGLE (SSC) deg
TRIMMING COILS 4 sets of harmonic
8 concentric
CONDUCTOR, material and type Cu
STORED ENERGY (cryogenic) MJ
POWER: main coils 100 max, kW; current stability 10 -5
trimming coils 10 max, kW; current stability
WEIGHT: Fe 53 tons; coils 2.3 tons
COOLING system Water
ION ENERGY (bending limit) E/A = 35 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 0 kV
TUNED by, coarse Mov. short. fine aut. flaps
RF 12 to 27 mHz, stable +/- 10 -6
Orb F to mHz
HARMONICS, RF/Orb F, used first, second
DEE - Gnd, max 40 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt)
ENERGY GAIN, max 110 kV/turn
RF PHASE, stable to +/- deg
RF POWER input, max 40 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width
VACUUM SYSTEM
OPERATING PRESSURE < 10 -5 Torr or mbar
PUMPS, No, Type, Size 2 diff.
3 turbo-mol.
ION SOURCES
Cold cath. PIG with two chimneys

INJECTION SYSTEM

EXTRACTION SYSTEM
Electr. defl. and magn. channel
FACILITIES FOR RESEARCH
SHIELDED AREA, fixed 150 m^2; movable m^2
TARGET STATIONS 4 in 2 rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model ND 10 to be replaced with ND 5xx
OTHER FACILITIES

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV), CURRENT (pA) Internal, External. Rows include p, d, 3He, 4He with Goal and Achieved values.

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH 13 RF deg 5 pA of 20 MeV p ions
PHASE EXC, max RF deg pA of MeV ions
EXTRACT eff 80 % pA of MeV ions
RESOL AE/E < 0.4 % pA of MeV ions
EMITTANCE
(pi mm. mrad) { .25 axial } pA of MeV ions
{ .30 rad }
OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS 95% SOLID STATES PHYSICS
BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS
Nucl. chem. 5%

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

Description of research programs, 3He recycling systems, msec. pulsing of ion source, external electr. deflector for pulse selection, see Annual Reports 1979-85, Nuclear Physics Group, Univ. of Oslo.