

ENTRY NO. 2

NAME OF MACHINE CYCLONE
INSTITUTION Université Catholique de Louvain
ADDRESS Chemin du Cyclotron, 2 - B - 1348 LOUVAIN-LA-NEUVE, Belgium
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IN CHARGE Y. JONGEN REPORTED BY G. RYCKEWAERT

HISTORY AND STATUS

DESIGN, date 1969 Model tests 1969
ENG DESIGN, date 1968-1969
CONSTRUCTION, date 1969-1971
FIRST BEAM, date (or goal) 1972
MAJOR ALTERATIONS

COST, ACCELERATOR 3.10^6 \$ U.S.
COST, FACILITY, total 6.5.10^6 \$ U.S.
FUNDED BY University of Louvain, IISN (State)

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ENGINEERS 3
TECHNICIANS 9 CRAFTS 3
GRAD STUDENTS involved during year
OPERATED BY Research staff or 4 Operators
OPERATION 168 hr/wk. On target 140 hr/wk
TIME DISTR. in house % Outside %
BUDGET. op & dev 600,000 \$ includ. salaries
FUNDED BY IISN - UCL

RESEARCH STAFF, not included above

USERS, in house 30 outside 45
GRAD STUDENTS involved during year 10
RESEARCH BUDGET, in house 450,000 \$ without salaries
FUNDED BY IISN - UCL

MAGNET

POLE FACE, diameter (compact) 215.6 cm, R extraction 93 cm
R injection cm
GAP, min 16.6 cm, Field 21.5 kG
min 40.5 cm, Field 11.5 kG at 4.10^6
AVERAGE FIELD at R ext 16 kG Ampere turns
B max / < B >
NUMBER OF SECTORS compact 4 Spiral, max 53 deg
separated
SECTOR ANGLE (SSC) deg
TRIMMING COILS 12 pairs

CONDUCTOR, material and type Cu (20 x 20 phi 13 mm)
STORED ENERGY (cryogenic) MJ
POWER: main coils 400 max, kW; current stability 10^-5
trimming coils 100 max, kW; current stability 10^-3
WEIGHT: Fe 200 tons; coils 6 tons
COOLING system deionized water
ION ENERGY (bending limit) E/A = 130 q^2/a^2 MEV/amu
(focusing limit) E/A = 95 q/a MEV/amu

ACCELERATION SYSTEM

DEES, number 2 86 deg
BEAM APERTURE 3.8 cm; DC Bias 0 kV
TUNED by, coarse MP fine MP auto
RF 10.6 to 23 MHz, stable +/- 0.1.10^-6
Orb F 3.6 to 23 MHz
HARMONICS, RF/Orb F, used 1, 2, 3
DEE-Gnd, max 50 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt) 10^-4
ENERGY GAIN, max 200 kV/turn
RF PHASE, stable to +/- 0.1 deg
RF POWER input, max 200 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 2.10^-6 Torr or mbar
PUMPS, No. Type, Size 2 x (OIL DIF. 12.000.1/s)

ION SOURCES

Internal: Livingston-Jones Hot cathode Pig
External: ECR

INJECTION SYSTEM

Axial injection

EXTRACTION SYSTEM

DC electrostatic + weak magn. channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 390 m^2; movable 1300 m^2
TARGET STATIONS 14 in 10 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES Remote target handling-hot cell
neutron beam (radiotherapy-biology)
neutron beam physics
on line mass separator (LISOL)

CHARACTERISTIC BEAMS

Table with columns: PARTICLE, ENERGY (MeV) Goal, Achieved, CURRENT (pA) Internal, External. Rows include p, alpha, Heavy ions, Ar8+, and SECONDARY n from (d + Be 50 MeV).

BEAM PROPERTIES

Table with columns: MEASURED, CONDITIONS. Rows include PULSE WIDTH, PHASE EXC, EXTRACT eff, RESOL, EMITTANCE.

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 50 SOLID STATES PHYSICS
BIOMEDICAL APPLICAT 15 ISOTOPE PRODUCTIONS 25

REFERENCES/NOTES

- 1)
2)

PLAN VIEW

