ENTRY No. 16

NAME OF MACHINE ....GANIL..... DATE .....September.81.....
INSTITUTION ...Grand Accélérateur National d'Ions Lourds (GANIL).....
ADDRESS ..BP. 5027 .- .14021 CAEN .- FRANCE.....
TEL .(31).94. 81. 11..... TELEX ...170 533 F.....
IN CHARGE .M.. GOUTTEFANGEAS REPORTED BY . GANIL STAFF.....

HISTORY AND STATUS

DESIGN, date ..1973..... Model tests ....1976.....
ENG DESIGN, date .1975 .- .1976.....
CONSTRUCTION, date ..1977. - .1982.....
FIRST BEAM, date (or goal) ..1982.....
MAJOR ALTERATIONS .....
.....
COST, ACCELERATOR .170 } MFF f.y.1977 .. salaries.....
COST, FACILITY, total ..250 } ..... excluded.....
FUNDED BY French AEC and I.N2.P3 (CNRS).....

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS ...AND..... ENGINEERS ..44.....
TECHNICIANS ..50..... CRAFTS ...10.....
GRAD STUDENTS involved during year .....
OPERATED BY ..... Research staff or ..... Operators
OPERATION ..... hr/wk, On target ..... hr/wk
TIME DISTR. in house ..... %, Outside ..... %
BUDGET, op & dev .....
FUNDED BY French AEC and I.N2.P3 (CNRS).....

RESEARCH STAFF, not included above

USERS, in house ..... outside .....
GRAD STUDENTS involved during year .....
RESEARCH BUDGET, in house .....
FUNDED BY .....

MAGNET (one SSC)

POLE FACE, diameter (compact) .... cm, R extraction .300 cm
R injection .. 857 ... cm
GAP, min .....10.. cm, Field ..16.5..... kG } at 173.000 ... Ampere turns
max .....10.. cm, Field ..16.5..... kG }
AVERAGE FIELD at R ext .....9.5..... kG
B max/ <B> ..1..73.....
NUMBER OF SECTORS { compact ..... / separated .4.... } Spiral, max .. deg
SECTOR ANGLE (SSC) .....52..... deg
TRIMMING COILS ..12 isochronous coils in series.....
28 harmonic and compensation coils.....
CONDUCTOR, material and type ..Copper + MgO.....
STORED ENERGY (cryogenic) ..... MJ
POWER : main coils .950.. max, kW ; current stability 10^{-5}...
trimming coils .140.. max, kW ; current stability 10^{-4}...
WEIGHT : Fe ...1700..... tons ; coils ...14..... tons
COOLING system . Demineralized water.....
ION ENERGY (bending limit) E/A = ..400.. q^2/a^2 MeV/amu
(focusing limit) E/A = ... q /a MeV/amu

ACCELERATION SYSTEM (one SSC)

DEES, number ...2..... ; angle .....34..... deg
BEAM APERTURE ..5..... cm ; DC Bias ..... kV
TUNED by, coarse mov. panel ... fine rotating loop.....
RF ..6..5..... to ...14..... mHz, stable ± $0.1\,10^{-6}$.....
Orb F ..1..6..... to ...7..... mHz (SSC2)
HARMONICS, RF/Orb F, used . 2-4 ..(SSC2).....
DEE - Gnd, max . 250 . kV, min gap ... 6..... cm
STABILITY, (pk-pk noise)/(pk RF volt) . 5.10^{-4}.....
ENERGY GAIN, max ..4. x 250..... kV/turn
RF PHASE, stable to ± ..0.1..... deg
RF POWER input, max ... 80/cavity..... kW
FREQUENCY MODULATION, rate ..O..... /s
modulator, type .....
beam pulse, width .....

VACUUM SYSTEM (SSC1 or SSC2)

OPERATING PRESSURE ....5.10^{-8}..... Torr or mbar
PUMPS, No, Type, Size .4.turbo pumps ..3500 l/s.....
.....8. cryo pumps. 20000 l/s.....
.....

ION SOURCES

.PIG .at the .center .of the .CO.injector.....

INJECTION SYSTEM (SSC1 - SSC2)

. Magnetic channel . + electrostatic inflector.....

EXTRACTION SYSTEM (SSC1 - SSC2)

. Electrostatic deflector. + magnetic channel .....

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed ..... m^2 ; movable ... 4000 ... m^2
TARGET STATIONS ..11..... in ...8..... rooms
STATIONS served at same time, max ..2.....
MAG SPECTROGRAPH, type .Energy loss spectrometer.....
COMPUTER model .MODCOMP.....
OTHER FACILITIES ...3 scattering chambers.....
..... high energy stripped ion beam.....
.....

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV/A Goal	ENERGY (MeV/A Achieved	CURRENT (pμA) Internal	CURRENT (pμA) External
...C.....	....95....	.....	.....	..1.6.....$^{-3}$...
...Kr.....	....50....	.....	.....	..5.10^{-3}...
...U.....	.....8....	.....	.....	..0.5.10...
.....	.....	.....	.....	.....
SECONDARY				(part/s)
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

BEAM PROPERTIES (SSC2)

GOAL		CONDITIONS	
PULSE WIDTH .6...	RF deg	.0.2...	pμ A of 95.. MeV/A. Cions
PHASE EXC, max ...	RF deg	.....	pμ A of .... MeV ... ions
EXTRACT eff ..90..	%	.0.2...	pμ A of 95.. MeV/A Cions
RESOL ΔE/E .0.1...	%	.0.2...	pμ A of 95.. MeV/A Cions
EMITTANCE			
(π mm. mrad) { .5. axial / .5.. rad }		.0.2...	pμA of .95.. MeV/A. Cions

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS 90 % SOLID STATES PHYSICS 10 %
BIOMEDICAL APPLICAT. .... ISOTOPE PRODUCTIONS ....
.....
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REFERENCES/NOTES

L'accélérateur d'Ions Lourds GANIL avril 1975

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS