

ENTRY NO. 17

NAME OF MACHINE ORLEANS ISOCHRONOUS CYCLOTRON DATE 19/01/79
INSTITUTION CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE
ADDRESS SERVICE DU CYCLOTRON 3A, rue de la Férollerie 45045 ORLEANS CEDEX

IN CHARGE G. GOIN REPORTED by

HISTORY AND STATUS

DESIGN, date 1971 MODEL tests 1971
ENG. DESIGN, date 1971
CONSTRUCTION, date 1972-1973
FIRST BEAM date (or goal) 1974
MAJOR ALTERATIONS
OPERATION, ~ 45 hr/wk; On Target 20 hr/wk
TIME DIST., in house %, outside %
USERS' SCHEDULING CYCLE weeks
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS ENGINEERS 2
TECHNICIANS 5 CRAFTS
GRAD STUDENTS involved during year
OPERATED BY Res staff or 2 Operators
BUDGET, op & dev
FUNDED BY C N R S

RESEARCH STAFF, not included above

USERS, in house 6 outside 12
GRAD STUDENTS involved during year
RES. BUDGET, in house
FUNDED BY C N R S

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed m²
movable 3 x 10 m²
TARGET STATIONS 2 in 2 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type
COMPUTER, model
OTHER FACILITIES Isotope production
Irradiation, solid state

REFERENCES/NOTES

MAGNET

POLE FACE diameter 160 cm; R extraction 67 cm
GAP, min 13 cm; Field 19 kG } at 0.25 x 10⁶
max 27 cm; Field kG } ampere turns
AVERAGE FIELD at R ext 15 kG
CURRENT STABILITY 20 parts/10⁶; B_{max}/(B))
NUMBER OF SECTORS 4 ; SPIRAL, max deg
POLE FACE COIL PAIRS: AVF /sec;
Harmonic correction 4
Rad grad /sec or Circ coils 8
WEIGHT: Fe 100 tons; Coils tons
CONDUCTOR, Material and type
STORED ENERGY MJ
COOLING SYSTEM
POWER: Main coils 100 max, kW
Trimming coils 26 max, kW
YOKE/POLE AREA %
SECTOR ANGLE (Sep Sec) deg
ION ENERGY (Bending limit) E/A = q²/A² MeV
(Focusing limit) E/A = q/A MeV

ACCELERATION SYSTEM

DEES, number 2 angle 60 deg
BEAM APERTURE 3 cm; DC BIAS kV
TUNED by, coarse M. PANEL fine Moving Panel
RF 20 to 40 MHz, stable ± 1 /10⁶
Orb F 5 to 20 MHz; GAIN, max 100 kV/turn
HARMONICS, RF/Orb F, used 2, 3, 4
DEE-Gnd, max 50 kV, min gap cm
STABILITY, (pk-pk noise)/(pk RF volt) 0.01
RF PHASE stable to ± 0.1 deg
RF POWER input, max 110 kW
RF PROTECT circuit, speed 10 μsec
Type Ignitron
FREQUENCY MODULATION, rate /sec
MODULATOR, type
BEAM PULSE, width

VACUUM SYSTEM

PUMPS, No., Type, Size
OPERATING PRESSURE 2 μTorr,
PUMPDOWN TIME 1.5 hrs

ION SOURCES/INJECTION SYSTEM

Internal axial Livingstone type

EXTRACTION SYSTEM

Deflector + focusing magnet

CONTROL SYSTEM

ENTRY NO. 17 (cont.)

CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)	
ENERGY	P	5 38	5 33	
	d	5 24	5 25	
	α	10 48	10 50	
CURRENT		(μA)	(μA)	
	Internal	P	200	200
		d	200	200
		α	100	60
	External	P	100	80
		d		80
α		40		
Secondary		(part/s)	(part/s)	

BEAM PROPERTIES

	Measured	Conditions
Pulse Width	_____ RF deg _____ μA of _____ MeV _____	
Phase Exc, max	_____ RF deg _____ μA of _____ MeV _____	
Extract Eff	_____ % _____ μA of _____ MeV _____	
Res, ΔE/E	_____ % _____ μA of _____ MeV _____	
Emittance	(mm-mrad) { _____ axial } _____ μA of _____ MeV _____ { _____ radial }	

OPERATING PROGRAMS, time dist

Basic Nuclear Physics	_____ %
Solid State Physics	_____ %
Bio-Medical Applications	_____ %
Isotope Production	_____ %
Development	_____ %
	_____ %
	_____ %

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, OPERATION SUMMARY, ADDITIONAL REFERENCES

Machine being constructed by CGR-MeV FRANCE

