ENTRY No. 29

NAME OF MACHINE Juelich Compact Cycl. (CV28) DATE SEP 81
INSTITUTION Kernforschungsanlage Juelich - IFF
ADDRESS Postfach 1913 , D-5170 Juelich , Germany
TEL ..... TELEX .....
IN CHARGE R. Hölzle, W. Kogler REPORTED BY R. Hölzle

HISTORY AND STATUS

DESIGN, date 1969 Model tests 1973
ENG DESIGN, date 1970
CONSTRUCTION, date 1973-1975
FIRST BEAM, date (or goal) Oct. 1975
MAJOR ALTERATIONS none

COST, ACCELERATOR $ 1 Mio
COST, FACILITY, total $ 2 Mio
FUNDED BY German Government

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT

SCIENTISTS --- ENGINEERS 2
TECHNICIANS 4 CRAFTS
GRAD STUDENTS involved during year
OPERATED BY --- Research staff or 4 Operators
OPERATION 80 hr/wk, On target 72 hr/wk
TIME DISTR. in house 40 %, Outside 80 %
BUDGET, op & dev $ 100 000 per year
FUNDED BY German Government

RESEARCH STAFF, not included above

USERS, in house 6 outside 20
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY

MAGNET

POLE FACE, diameter (compact) 96 cm, R extraction 42 cm
R injection cm
GAP, min 5 cm, Field kG
max 10 cm, Field kG } at 2×10^6
AVERAGE FIELD at R ext 18.5 kG } Ampere turns
B max/ <B>
NUMBER OF SECTORS { compact 3 / separated } Spiral, max 60 deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS

Copper
CONDUCTOR, material and type
STORED ENERGY (cryogenic) MJ
POWER : main coils 60 max, kW ; current stability 5×10^{-6}
trimming coils 50 max, kW ; current stability
WEIGHT : Fe total 23 tons ; coils tons
COOLING system Demineralized water
ION ENERGY (bending limit) E/A = 28 q^2/a^2 MeV/amu
(focusing limit) E/A = q /a MeV/amu

ACCELERATION SYSTEM

DEES, number 2 ; angle 90 deg
BEAM APERTURE 2.5 cm ; DC Bias 0.5-2 kV
TUNED by, coarse short plane fine Var. cap 6
RF 6 to 26 mHz, stable ± 1/10
Orb F to mHz
HARMONICS, RF/Orb F, used fundamental
DEE - Gnd, max kV, min gap 1.27 cm
STABILITY, (pk-pk noise)/(pk RF volt) 1×10^{-3}
ENERGY GAIN, max kV/turn
RF PHASE, stable to ± deg
RF POWER input, max 75 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width

VACUUM SYSTEM

OPERATING PRESSURE 5×10^{-5} Torr or mbar
PUMPS, No, Type, Size
2x1500 l/s Turbo

ION SOURCES

"cold cathode" Penning or thermionic

INJECTION SYSTEM

EXTRACTION SYSTEM

dc electrostatic + mag. channel

FACILITIES FOR RESEARCH

SHIELDED AREA, fixed 200 m² ; movable --- m²
TARGET STATIONS 8 in 4 rooms
STATIONS served at same time, max 1
MAG SPECTROGRAPH, type none
COMPUTER model PDP 11-40 (1981)
OTHER FACILITIES Pneumatic transfer for internal and external target

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
P	2-24	2-24	500	70
d	3-14	3-14	500	100
$^3He^{++}$	5-36	5-36	100	70
α	6-28	6-28	100	50
SECONDARY			(part/s)	
n			3×10^{12}	

BEAM PROPERTIES

MEASURED CONDITIONS
PULSE WIDTH RF deg pμ A of MeV ions
PHASE EXC, max RF deg pμ A of MeV ions
EXTRACT eff % pμ A of MeV ions
RESOL ΔE/E % pμ A of MeV ions
EMITTANCE
(π mm. mrad) { 15 axial / 15 rad } 5 pμA of 24 MeV P ions

OPERATING PROGRAMS, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS 40 %
BIOMEDICAL APPLICAT 20 % ISOTOPE PRODUCTIONS 40 %

REFERENCES/NOTES

J. Hemmerich, R. Hölzle, W. Kogler,
Kerntechnik 19 (1977)

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS