ENTRY No. CU30

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

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
COST, ACCELERATOR 8.1 Mio
COST, FACILITY, total 8.2 Mio
FUNDED BY German Government

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS -- ENGINEERS 2
TECHNICIANS 4 CRAFTS
GRAD STUDENTS involved during year 4
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 Ampere turns
AVERAGE FIELD at R ext 18.5 kG
B max/ <B>
NUMBER OF SECTORS compact 3, separated — Spiral, max 60 deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS
CONDUCTOR, material and type Copper
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^2/a^2 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
RF 6 to 26 mHz, stable ± 1/10E6
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
2 x 1500 l/s Turbo

ION SOURCES
"cold cathode" Penning or thermionic

INJECTION SYSTEM
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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. x 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. Holzle, W. Kogler,
Kerntechnik 19 (1977)

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS