

ENTRY NO. 32

NAME OF MACHINE . . . Juelich 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 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 . . . } Spiral, max 60 . . . deg
 { separated }

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 . . . q²/A² 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
 RF . . . 6 . . . to . . . 26 . . . MHz, stable $\pm 1/10^6$
 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 \pm 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

.
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)		CURRENT (μ A)	
	Goal	Achieved	Internal	External
p	2-24 . . .	2-24 . . .	500 . . .	70 . . .
d	3-14 . . .	3-14 . . .	500 . . .	100 . . .
³ He ⁺⁺	5-36 . . .	5-36 . . .	100 . . .	70 . . .
α	6-28 . . .	6-28 . . .	100 . . .	50 . . .
SECONDARY	(part/s)			
p			3 x 10 ¹² . . .	

BEAM PROPERTIES

MEASURED	CONDITIONS	
	RF deg	μ A of MeV ions
PULSE WIDTH	RF deg	μ A of MeV ions
PHASE EXC, max	RF deg	μ A of MeV ions
EXTRACT eff %		μ A of MeV ions
RESOL $\Delta E/E$ %		μ A of MeV ions
EMITTANCE		
(π mm-mrad)	15 . . . axial	5 . . . μ A of 24 . . . MeV P . . .
	15 . . . rad	

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, COMMENTS, ETC.