

ENTRY NO. 92

NAME OF MACHINE U-200
INSTITUTION Joint Institute for Nuclear Research
LOCATION Dubna, USSR DATE 1972, same for 1975
IN CHARGE G. N. Flerov* REPORTED by same

HISTORY AND STATUS

DESIGN, date 1966 MODEL tests ---
ENG. DESIGN, date 1966-1967
CONSTRUCTION, date 1966-1967
FIRST BEAM date (or goal) int. 1968; ext. 1968
MAJOR ALTERATIONS none
OPERATION, 120 hr/wk; On Target 84 hr/wk
TIME DIST., in house 100 %, outside _____ %
USERS' SCHEDULING CYCLE _____ weeks
COST, ACCELERATOR _____
COST, FACILITY, total _____
FUNDED BY _____

ACCELERATOR STAFF, OPERATION and DEVELOPMENT

SCIENTISTS _____ ENGINEERS _____
TECHNICIANS _____ CRAFTS _____
ADMIN & CLER _____ TOTAL _____
GRAD. STUDENTS involved during year _____
OPERATED BY _____ Res staff or _____ Sp operators
BUDGET, op & dev _____
FUNDED BY _____

RESEARCH STAFF, not included above

USER GROUPS, in house _____ outside _____
STAFF SCIENTISTS, in house _____ outside _____
TOTAL RES STAFF, in house _____ outside _____
GRAD STUDENTS involved during year _____
RES. BUDGET, in house _____
FUNDED BY _____

FACILITIES FOR RESEARCH PROGRAMS

SHIELDED AREA, fixed 225 m²
movable _____ m²
TARGET STATIONS 4 in 2 ROOMS
STATIONS SERVED AT THE SAME TIME, max 1
MAG SPECTROGRAPH, type _____
ON-LINE COMPUTER, model _____
FACILITIES for:
Isotope production _____
Irradiation, Solid State _____
Biological _____
Time-of-Flight Study _____
On-Line Mass Separation _____

NOTATIONS

MAGNET

POLE FACE dia 200 cm; R ext 90 cm
GAP, min 3 cm; Field 26 kG
max 15 cm; Field 14 kG } at 0.59 X 10⁶
AVE FIELD at R max 20 kG } A-turns
CURRENT, STABILITY ± 100 parts/10⁶
B max/ = 1.3
AVF SECTORS 4 SPIRAL, max --- deg
POLE FACE coil pairs, AVF _____ /sec
Harmonic 4 /sec; Rad Grad --- /sec, or
7 circular; HEAVY ION, E max = 156 q²/A
WEIGHT, Fe 220, Cu, or Al 11.5 tons
POWER, main coils 350, pole tips 20
total 370 kW; cooled by H₂O
YOKE/POLE area 130 %; θ sec (Sect Mag) _____ deg
TOTAL POWER, installed 1.9 MW
normal load 0.8 MW
arc type with
heated cathode
ION SOURCE, int _____
ext ---

ACCELERATION SYSTEM

DEES, number 2, width 45 deg
BEAM APERTURE 2.8 cm; DC BIAS 0 kV
TUNED by, coarse MS, fine _____
RF 12 to 21.5 MHz, stable ± 10 /10⁶
Orb F 3 to 10.7 Mc/s; GAIN 275 kV/t
HARMONICS, RF/OF, used 2,3
DEE-Gnd, max 75 kV, x/field, min _____ cm,
STABILITY, (pk-pk noise)/(pk RF volt) _____
RF PHASE stable to ± _____ deg
RF POWER input, max 100 kW
RF PROTECT curcuit, speed _____ μs
type _____
EXTRACT System stripping and dc elec-
trostatic

SELECTED REFERENCES

IEEE Trans. Nucl. Sci. NS-16,
No. 3, 802, (1969).

* as per cablegram 5/14/75

ENTRY NO. 92 (cont.)

CHARACTERISTIC BEAMS

	Particle	Goal (MeV)	Achieved (MeV)
ENERGY	4He^{1+}	39	36.5
	12C^{4+}	208	198
	136Xe^{30+}	950	900
CURRENT	4He^{1+}	(μA)	(μA)
	Internal		≤ 600
	12C^{3+}		60
External	α		60
	12C^{3+}		60
		(part/s)	(part/s)
Secondary			
HEAVIEST ion	136Xe^{30+}		$2 \cdot 10^{10}$

BEAM PROPERTIES

	Measured	Conditions
Pulse Width	_____ RF deg	_____ μA of _____ MeV
Phase Exc, max	_____ RF deg	_____ μA of _____ MeV
Extract Eff	90-100%	60 μA of 109 MeV 12C^{3+}
Res, $\Delta E/E$	1%	60 μA of 36.5 MeV α
Emittance	{ 28 axial } { 70 radial }	5 μA of 36.5 MeV α
VACUUM norm	0.4; 1.0 μtorr	PUMPDOWN time 1 to 6 hr

OPERATING PROGRAMS, time dist

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

OTHER FEATURES and OPERATION SUMMARY