

**ENTRY NO. 68**

NAME OF MACHINE . . . C-200 . . . . . DATE . . . APRIL 25, 1984 . . . . .  
 INSTITUTION . . . . . HEAVY ION LABORATORY AT THE WARSAW UNIVERSITY . . . . .  
 ADDRESS . . . . . 02-097 WARSZAWA, UL. BANACHA 4, POLAND . . . . .  
 TEL . . . 235-280 . . . . . TELEX . . . . . 815548 UW.PHY.PL . . . . .  
 IN CHARGE . . . B. Sikora . . . . . REPORTED BY . . . C. Weychert, P. Gmaj . . . . .  
 C. Weychert

**HISTORY AND STATUS**

DESIGN, date . . . 1978 . . . . . Model tests . . . . .  
 ENG DESIGN, date . . . . .  
 CONSTRUCTION, date . . . . .  
 FIRST BEAM, date (or goal) . . . 1988\* . . . . .  
 MAJOR ALTERATIONS . . . . .

**COST, ACCELERATOR**

COST, FACILITY, total . . . . .  
 FUNDED BY . . . . .

**ACCELERATOR STAFF, OPERATION AND DEVELOPMENT**

SCIENTISTS . . . 4 . . . . . ENGINEERS . . . 8 . . . . .  
 TECHNICIANS . . . 9 . . . . . CRAFTS . . . 5 . . . . .

GRAD STUDENTS involved during year . . . . .  
 OPERATED BY . . . Research staff or . . . . . Operators

OPERATION . . . . . hr/wk. On target . . . . . hr/wk  
 TIME DISTR. in house . . . . . %, outside . . . . . %

BUDGET, op & dev . . . . .  
 FUNDED BY . . . . .

**RESEARCH STAFF, not included above**

USERS, in house . . . . . outside . . . . .  
 GRAD STUDENTS involved during year . . . . .  
 RESEARCH BUDGET, in house . . . . .

FUNDED BY . . . . .

**MAGNET**

POLE FACE, diameter (compact) . . . 200 . . . cm, R-extraction . 90 . . . cm  
 R injection . . . . . cm

GAP, min . 2.54 . . . cm, Field . . . 27 . . . kG }  
 max . 15 . . . cm, Field . . . 17 . . . kG } at . 525 . 000 . . . . .

AVERAGE FIELD at R ext . . . 21.4 . . . kG } Ampere turns  
 B max / < B > . . . . . 1.26 . . . . .

NUMBER OF SECTORS { compact . . . 4 . . . } Spiral, max . . 0 deg  
 { separated . . . . . }

SECTOR ANGLE (SSC) . . . . . 42 . . . . . deg  
 TRIMMING COILS . . . . . 20 . . . . . circular . . . . .

. . . . . 8 . . . . . harmonic . . . . .  
 CONDUCTOR, material and type . . . Cu, 24x24 mm<sup>2</sup>, hole φ16 . . . . .

STORED ENERGY (cryogenic) . . . . . MJ  
 POWER: main coils . 325 . . . max kW: current stability . 10<sup>-4</sup> . . . . .  
 trimming coils . . 30 . . . max kW: current stability . 4x10<sup>-4</sup> . . . . .

WEIGHT: Fe . . . . . 220 . . . . . tons: coils . . . 20 . . . . . tons  
 COOLING system . . . . . demineralized water . . . . .

ION ENERGY (Bending limit) E/A = . . . 180 . . . q<sup>2</sup>/A<sup>2</sup> MeV/amu  
 (Focusing limit) E/A = . . . . . 48 . . . . . q/A MeV/amu

**ACCELERATION SYSTEM**

DEES, number . . . . . 2 . . . . . angle . . . 45 . . . . . deg  
 BEAM APERTURE . . . 2.4 . . . . . cm; DC Bias . . . . . kV

TUNED by, coarse . . . panel . . . . . fine . . . . . trimmer . . . . .

RF . . . 12.3 . . . to . . . 21.4 . . . MHz, stable ± 10<sup>-7</sup> . . . . .  
 Orb F . . . 4 . . . . . to . . . 21.4 . . . MHz

HARMONICS, RF/Orb F, used . . . 2, . 3, . 1 . . . . .  
 DEE-Gnd, max . . . . . 75 . . . . . kV, min gap . . . 2.4 . . . . . cm

STABILITY, (pk-pk noise)/(pk RF volt) . . . . . 10<sup>-3</sup> . . . . .  
 ENERGY GAIN, max . . . . . 270 . . . . . kV/turn

RF PHASE, stable to ± . . . . . 1 . . . . . deg  
 RF POWER input, max. . . . . 2 x 120 . . . . . kW

FREQUENCY MODULATION, rate . . . . . /s  
 modulator, type . . . . .  
 beam pulse, width . . . . .

**VACUUM SYSTEM**

OPERATING PRESSURE . . . . . 1 x 10<sup>-6</sup> . . . . . Torr or mbar  
 PUMPS, No, Type, Size . . . 4 oil dif. pumps . . . . .

. . . . . 1900 l/s each, liquid nitrogen traps . . . . .

**ION SOURCES**

. . . . . hot cathode Penning type . . . . .

**INJECTION SYSTEM****EXTRACTION SYSTEM**

. . . . . stripping + electrost. defl. . . . .

**FACILITIES FOR RESEARCH**

SHIELDED AREA, fixed . 30 . . . . . m<sup>2</sup>; movable . 1300 . . . . . m<sup>2</sup>  
 TARGET STATIONS . . . 7 . . . . . in 6 rooms . . . . . rooms

STATIONS served at same time, max . . . 1 . . . . .  
 MAG SPECTROGRAPH, type . . . . .  
 COMPUTER model . . . . .

OTHER FACILITIES energy monochromatization . . . . .  
 . . . . . by 2 x 120 deg magnets . . . . .

**CHARACTERISTIC BEAMS**

PARTICLE	ENERGY (MeV)		CURRENT (μA)	
	Goal	Achieved	Internal	External
<sup>2</sup> H <sup>+</sup>	30		100	
<sup>12</sup> C <sup>+</sup> 3	120		10	
<sup>40</sup> Ar <sup>+</sup> 8	280		1	

SECONDARY . . . . . (part/s)

. . . . .

. . . . .

**BEAM PROPERTIES**

MEASURED	CONDITIONS	
	RF deg	μA of . . . . . MeV . . . . . ions
PULSE WIDTH		
PHASE EXC. max		
EXTRACT eff. . . . . %		
RESOL ΔE/E . . . . . %		
EMITTANCE		

. . . . . μA of . . . . . MeV . . . . . ions

. . . . . μA of . . . . . MeV . . . . . ions

. . . . . μA of . . . . . MeV . . . . . ions

(π mm-mrad) . . . . . axial . . . . . μA of . . . . . MeV . . . . .  
 . . . . . rad . . . . .

**OPERATING PROGRAMS**, time distribution  
 BASIC NUCLEAR PHYSICS . . . . . SOLID STATES PHYSICS . . . . .  
 BIOMEDICAL APPLICAT. . . . . ISOTOPE PRODUCTIONS . . . . .

**REFERENCES/NOTES**  
 1)  
 2)

**PLAN VIEW OF FACILITY, COMMENTS, ETC.**

\* construction stopped 1981 - 1983,  
 construction resumed 1984