ENTRY No. FM-6

NAME OF MACHINE ... SFSC-200 ... DATE ... July 1981
INSTITUTION ... The Gustaf Werner Institute, University of Uppsala
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IN CHARGE Prof. S. Kullander ... REPORTED BY ... S. Holm

HISTORY AND STATUS
DESIGN, date ..1946, 1977 .... Model tests .1947, 1974-78..
ENG DESIGN, date 1946-1951, 1977-
CONSTRUCTION, date 1947-1951, 1977-
FIRST BEAM, date (or goal) .1951, goal 1983
MAJOR ALTERATIONS .Complete reconstruction to ... sectorfocusing 1977-
COST, ACCELERATOR .Reconstruction Approx. 14 MCr
COST, FACILITY, total
FUNDED BY .Sw. Govt., Sw. Nat. Sci Res. Council

ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS ... ENGINEERS ...
TECHNICIANS ... CRAFTS ...
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) 280. cm, R extraction 120. cm
R injection ... cm
GAP, min .200 .... cm, Field ... kG
max .362 .... cm, Field ... kG } at 0.7 · 10^6 Ampere turns
AVERAGE FIELD at R ext .....17.5..... kG
B max/ <B> ...
NUMBER OF SECTORS { compact ..3.. / separated ..... } Spiral, max .. deg
SECTOR ANGLE (SSC) ... deg
TRIMMING COILS ....13 pairs circular ... 2 sets harmonic ...
CONDUCTOR, material and type ....Cu...
STORED ENERGY (cryogenic) ... MJ
POWER : main coils ..300. max, kW ; current stability ± .10ppM
trimming coils ...60. max, kW ; current stability ± 100 ppM
WEIGHT : Fe ...600..... tons ; coils ....50..... tons
COOLING system . Demineralized water ...
ION ENERGY (bending limit) E/A = ..200.. q^2/a^2 MeV/amu
(focusing limit) E/A = ...110.. q /a MeV/amu

ACCELERATION SYSTEM
DEES, number .....2..... ; angle decreasing from 72 deg
BEAM APERTURE 4.2-2.5.. cm ; DC Bias .....0..... kV
TUNED by, coarse ..MS..... fine Broad band or ind....
RF .....24... to ....12.... mHz, stable ± ...
Orb F .....4... to ....24.... mHz
HARMONICS, RF/Orb F, used .....1 - 3 (4)...
DEE - Gnd, max ..50.. kV, min gap .....0.5..... cm
STABILITY, (pk-pk noise)/(pk RF volt) ...
ENERGY GAIN, max .....200..... kV/turn
RF PHASE, stable to ± ... deg
RF POWER input, max .....200..... kW
FREQUENCY MODULATION, rate Variable. ≤ .1000..... /s
modulator, type . Broad band operation ...
beam pulse, width .....10. - 50 us ...

VACUUM SYSTEM
OPERATING PRESSURE .. < 10^{-6} ... Torr or mbar
PUMPS, No, Type, Size ..2 oildiff. pumps, each ...
.....20.000 l/s .....
...

ION SOURCES
.....Internal PIG, possible external injection .....

INJECTION SYSTEM
...

EXTRACTION SYSTEM
Regenerative and precessional, el. and magn. channels..

FACILITIES FOR RESEARCH
SHIELDED AREA, fixed ... m^2 ; movable ... m^2
TARGET STATIONS ..... in ..... rooms
STATIONS served at same time, max ...
MAG SPECTROGRAPH, type ...
COMPUTER model ...
OTHER FACILITIES ...
...
...

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV) Goal	Achieved	CURRENT (pμA) Internal	External
p	10-200			10
d	25-100			40
$^3He^{2+}$	35-270			2
Heavier	≤ 200 q^2/M			
SECONDARY				(part/s)

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) { ... axial / .... rad }		..... pμA of	MeV ...	ions

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

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

The cyclotron is being reconstructed to a sector focusing machine. High energy protons and ^3He particles will be accelerated with frequency modulation. While isochronous operation will be possible for lower energies and for other particles. A new building for an enlarged experimental area is being projected.