

ENTRY NO: FM-1
Machine Name: Synchrocyclotron 200 MeV protons (SC200)
Date: 6/5/01 1:41:54 PM
Institution: Centre de Protontherapie
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HISTORY

Designed By: Institut de Physique Nucleaire (I.P.N)/IN2P3/
CNRS

Construction Dates: 09/1975

First Beam Date: 20/06/1977

CHARACTERISTIC BEAMS

ions	/ energy(MeV/N)	/current(pps)	/power(w)
p	200	12.5x10 ⁻¹²	400

transmission efficiency(source to extract beam)

typical: 70% - **best:** 75%

tranverse emittance

emittance definition:

vertical: 9 π mm mrad

horizontal: 10 π mm mrad

longitudinal: (Δ) E/E)%xdeg RF

USES

basic research: 0%

therapy: 65%

development: 6%

isotope production: 0%

other: 5%

maintenance: 13%

beam tuning: 11%

Total Time: 3080h/year

TECHNICAL DATA

a)magnet: type: IRON

Kb: MeV/A **Kf:** MeV/A

average field (min/max): 1.53-1.61 T

number of magnet sectors:

hill angular width: hill angular width

spiral (max): deg

pole parameters

diameter: 3.2 m

injection radius: 0.01 m

extraction radius: 1.4 m

hill gap: m **valley gap:** m

trim coils

-number: x2

-current(max): A-turns

harmonic coils

-number: xNsectorsx2

-current(max): A-turns

main coils

number: 4x2

total ampere-turns: 630000 A-turns

current: 630 A

stored energy: MJ

weight - iron: 900t coils: 22t

power

main coils (total): kW

trim coils (total max): kW

refrigerator (cryogenic): kW

b)RF

acceleration

frequency range: MHz

harmonic modes:

number of dees:

number of cavities:

dee angular width: degrees

voltage

at injection: kV(peak to ground, max)

at extraction: kV(peak to ground, max)

peak: kV(peak to ground, max)

line power(max): kW

stability

phase: deg

voltage: %

injection

c)ion source: PIG hot filament

external injection:

components:

source bias voltage: kV

injection energy: MeV/N

buncher:

injection efficiency: %

d)injector:

e)extraction

Electromagnetic Channel Magnetostatic channels(5)

efficiency

typical: 70%

best: 75%

f)vacuum

pumps: Oil Diffusion Galileo 16000 1/s

achieved vacuum: Pa

REFERENCES

EXPERIMENTAL FACILITIES

COMMENTS