

Entry: **C16**
 Machine Name:SSC1
 Address:BP 5027 14076 CAEN CEDEX 5 - FRANCE
 In Charge of the cyclotron: M.H.Moscattello (operation)
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HISTORY

Design by: in house
 Construction time: 1976-1982
 First beam: nov 82

CHARACTERISTIC BEAMS

ions / energy (MeV/n) / current (pps) / power (W) :
 - ¹²C to ³⁶Ar / 15 / 2 10¹² / 100 (planned: 2 10¹³ / 1500)
 - ⁸⁶Kr / 10 / 1 10¹² / 10
 - ¹³²Xe / 7 / 1 10¹² / 5
 - ²³⁸U / 4 / 5 10¹⁰ / < 1

transmission efficiency (total)
 - typical: ... 90 % - best: 98 %
 transverse emittance (rms)
 - vertical: 7 π mmmrad
 - horizontal: 7 π mmurad
 longitudinal emittance (rms) : 2 10⁻³ . 10 ΔE/E.deg RF

USES

a) main beam
 SSC2 injector: 65 % basic research: 5 %
 development: 10 % maintenance: 5 %
 beam tuning (all cyclotrons) : 15 %
 total time: 5000 h/year
 b) other state charge beam: Medium Energy Output

TECHNICAL DATA

a) magnet
 type: room temperature
 Kb: 380 MeV/A Kf: 380 MeV/A
 average field (min-max): 0.39 - 0.95 T
 number of magnet sectors: 4
 - angle: 52 deg
 - spiral (max): no
 pole parameters
 - diameter: 6 m
 - injection radius: 0.85 m
 - extraction radius: 3 m
 hill gap: 0.01 m valley gap: m
 field trimming
 - trim coils
 - number: 13 / sector
 - current (max): 50 A
 - harmonic coils
 - number: 1 / sector
 - current (max): 110 A
 - others
 - number: 3 to 5 / sector
 - current (max): 200 A
 main coils:
 - number: 8 (2 per sector)
 - Ampere-turns: 190000/sector A.T.
 - current: 1850 A
 stored energy: MJ
 weight : - iron: 1700 t - coils: 14 t
 power
 - main coils (total): 950 kW
 - trim coils (total max): 140 kW
 - refrigerator (cryogenic): kW

b) RF

- acceleration
 - frequency range: 7 to 14 MHz
 - harmonic modes: 5
 - number of dees: 2
 - angular aperture: 34 deg
 - voltage:- average (min-max): 70-180 kV
 - variation with radius:
 - power in (max): 100(per dee) kW
 - stability: - phase: ±0.1 deg - voltage: ± 0.01 %

- other cavities
 - purpose:
 - frequency range: MHz
 - region of influence: m
 - voltage (max): kV
 - power in (max): kW
 - stability:- phase: deg - voltage: %

c) injection

- internal source: no
 - external (radial/axial): radial
 - elements: 4 magnetic channels
 1 electrostatic inflector
 - source voltage: kV
 - injection energy: 0.3 to 1 MeV/n
 - rebuncher: harmonic 1 - 80 kV
 - injection efficiency: up to 100 %
 d) ion sources/injector
 C01 or C02 (see other entry)

e) extraction

- elements, characteristics:
 - 1 electrostatic deflector with septum
 - 4 magnetic channels
 - efficiency
 - typical: 90 % - best: 98 %

f) vacuum

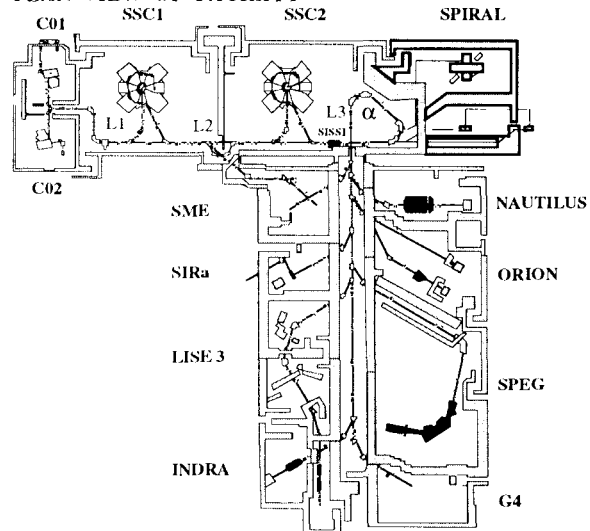
- pumps: 8 cryopumps (20000 l/s each)
 4 turbopumps (3500 l/s each)
 - achieved vacuum: 6 10⁻⁶ Pa

REFERENCES

EXPERIMENTAL FACILITIES

9 experiment rooms
 2 of them provided with beam in time sharing
 Medium Energy Output room (SME)

PLAN VIEW OF FACILITY



COMMENTS