**Entry**: C15
**Machine Name**: C02
**Address**: BP 5027 14076 CAEN CEDEX 5 - FRANCE
**In Charge of the cyclotron**: M.H.Moscatello (operation) F.Loyer (equipments)
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**Date**: July 98
**Institution**: GANIL
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## HISTORY

**Design by**: in house
**Construction time**: 1976-1980
**First beam**: 1980

## CHARACTERISTIC BEAMS

**ions / energy** (MeV/n) **/ current** (pps) **/ power** (W) :
- $^{12}C$ to $^{238}U$ / 0.3 to 1 / 5 $10^{13}$ (gas) / 1
- /1 $10^{11}$ to 1 $10^{13}$ (metal) / << 1
- (depend of the ion and of the SSC energy)
-

**transmission efficiency (total)**
- **typical**: 20 % - **best**: 25 %

**transverse emittance** (rms)
- **vertical**: 40 π mmmrad
- **horizontal**: 40 π mmmrad

**longitudinal emittance** (rms) $10^{-2}$ . 12 ΔE/E.deg RF

## USES

**SSC1 injector**: 30 % **basic research**: 0 %
**development**: 50 % **maintenance**: 5 %
**beam tuning** (all cyclotrons) : 15 %
**total time**: 5000 h/year

## TECHNICAL DATA

**a) magnet**
**type**: room temperature
**Kb**: 28 MeV/A **Kf**: 28 MeV/A
**average field (min-max)**: 1.0 - 1.565 T
**number of magnet sectors**:
- **angle**: deg
- **spiral (max)**: deg

**pole parameters**
- **diameter**: m
- **injection radius**: 0.0364 m
- **extraction radius**: 0.488 m

**hill gap**: 0.021 m **valley gap**: m
**field trimming**
- **trim coils**
  - **number**: 6
  - **current (max)**: 500 A
- **harmonic coils**
  - **number**:
  - **current (max)**: A
- **others**
  - **number**:
  - **current (max)**: A

**main coils**:
- **number**: 2
- **Ampere-turns**: A.T.
- **current**: 1500 A

**stored energy**: MJ
**weight** : - **iron**: t - **coils**: t
**power**
- **main coils (total)**: kW
- **trim coils (total max)**: kW
- **refrigerator (cryogenic)**: kW

**b) RF**
- **acceleration**
  - **frequency range**: 7 to 14 MHz
  - **harmonic modes**: 3
  - **number of dees**: 1
  - **angular aperture**: 180 deg
  - **voltage**:- **average (min-max)**: 50-90 kV
    - **variation with radius**:
    -
  - **power in (max)**: 30 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)**: axial
  - **elements**: 1 electrostatic Müller inflector
  - **source voltage**: 20 kV
  - **injection energy**: MeV/n
  - **rebuncher**: harmonic 1 and 21 electrostatic inflector
- **injection efficiency**: up to 25 %

**d) ion sources/injector**
ECRIS (ECR4 - 14.5 GHz)

**e) extraction**
- **elements, characteristics:**
  - 1 electrostatic deflector with septum
  - 1 electrostatic quadrupole
  -
  -
- **efficiency**
  - **typical**: 90 % - **best**: 100 %

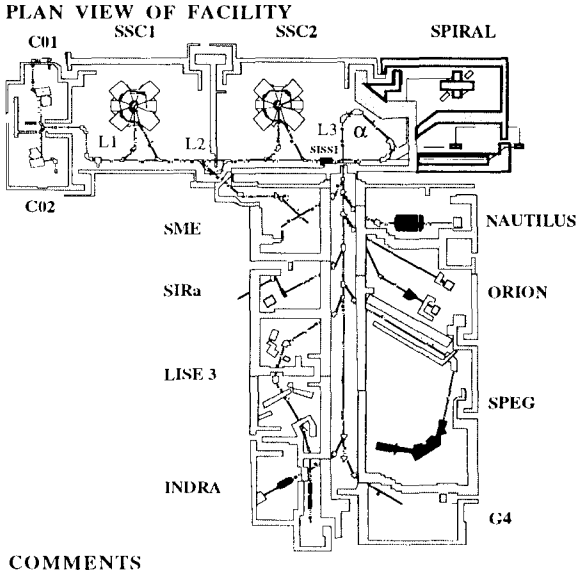
**f) vacuum**
- **pumps**: 3 cryopumps (20000 l/s each)
-
- **achieved vacuum**: 5 $10^{-6}$ Pa

## REFERENCES

## EXPERIMENTAL FACILITIES

injector of SSC1
planned : low energy beam facility (IRRSUD)

## PLAN VIEW OF FACILITY




## COMMENTS