

ENTRY NO. 16

NAME OF MACHINE SARA Rhone-Alpes Accelerator System DATE July 78  
 INSTITUTION Institut des Sciences Nucléaires Grenoble and Inst.Phys.Nucl.  
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**HISTORY AND STATUS**

DESIGN, date 1976 MODEL tests 1977  
 ENG. DESIGN, date 1976 - 1977  
 CONSTRUCTION, date beginning 1977  
 FIRST BEAM date (or goal) 1980  
 MAJOR ALTERATIONS \_\_\_\_\_  
 OPERATION, \_\_\_\_\_ hr/wk; On Target \_\_\_\_\_ hr/wk  
 TIME DIST., in house \_\_\_\_\_ %, outside \_\_\_\_\_ %  
 USERS' SCHEDULING CYCLE \_\_\_\_\_ weeks  
 COST, ACCELERATOR 1.5 . 10<sup>6</sup> } (1976)  
 COST, FACILITY, total Existing  
 FUNDED BY I N2 P3 - CNRS

**ACCELERATOR STAFF, OPERATION and DEVELOPMENT**

SCIENTISTS \_\_\_\_\_ ENGINEERS \_\_\_\_\_  
 TECHNICIANS \_\_\_\_\_ CRAFTS \_\_\_\_\_  
 GRAD STUDENTS involved during year \_\_\_\_\_  
 OPERATED BY \_\_\_\_\_ Res staff or \_\_\_\_\_ Operators  
 BUDGET, op & dev \_\_\_\_\_  
 FUNDED BY \_\_\_\_\_

**RESEARCH STAFF, not included above**

USERS, in house \_\_\_\_\_ outside \_\_\_\_\_  
 GRAD STUDENTS involved during year \_\_\_\_\_  
 RES. BUDGET, in house \_\_\_\_\_  
 FUNDED BY \_\_\_\_\_

**FACILITIES FOR RESEARCH**

SHIELDED AREA, fixed \_\_\_\_\_ m<sup>2</sup>  
 movable \_\_\_\_\_ m<sup>2</sup>  
 TARGET STATIONS \_\_\_\_\_ in \_\_\_\_\_ rooms  
 STATIONS served at same time, max \_\_\_\_\_  
 MAG SPECTROGRAPH, type \_\_\_\_\_  
 COMPUTER, model \_\_\_\_\_  
 OTHER FACILITIES \_\_\_\_\_

**REFERENCES/NOTES**

- Projet Post Accélérateur Grenoble Int. Report. March 76
- Rhône Alpes Acceleration System Berlin Conference April 76

**MAGNET 4 x 48° sectors**

POLE FACE diameter \_\_\_\_\_ cm; R extraction 2108 cm  
 GAP, min 6 cm; Field 14.5 kG } at 89.6 X 10<sup>3</sup>  
 max \_\_\_\_\_ cm; Field \_\_\_\_\_ kG } ampere turns  
 AVERAGE FIELD at R ext \_\_\_\_\_ kG  
 CURRENT STABILITY \_\_\_\_\_ parts/10<sup>6</sup>; B<sub>max</sub>/ $\langle B \rangle$  \_\_\_\_\_  
 NUMBER OF SECTORS \_\_\_\_\_; SPIRAL, max \_\_\_\_\_ deg  
 POLE FACE COIL PAIRS: AVF \_\_\_\_\_ /sec;  
 Harmonic correction \_\_\_\_\_  
 Rad grad \_\_\_\_\_ /sec or Circ coils \_\_\_\_\_  
 WEIGHT: Fe 100 tons; Coils 1 tons  
 CONDUCTOR, Material and type Cu 14 x 14 mm<sup>2</sup>  
 STORED ENERGY \_\_\_\_\_ MJ  
 COOLING SYSTEM Water  
 POWER: Main coils 46/Sector max, kW  
 Trimming coils 2.5/Sector max, kW  
 YOKE/POLE AREA \_\_\_\_\_ %  
 SECTOR ANGLE (Sep Sec) 48 deg  
 ION ENERGY (Bending limit) E/A = 120 q<sup>2</sup>/A<sup>2</sup> MeV  
 (Focusing limit) E/A = \_\_\_\_\_ q/A MeV

**ACCELERATION SYSTEM**

DEES, number 2 angle 34 deg  
 BEAM APERTURE 3 cm; DC BIAS 0 kV  
 TUNED by, coarse Mov. Pan. fine Mov. Pan.  
 RF 15 to 25 MHz, stable  $\pm$  \_\_\_\_\_ /10<sup>6</sup>  
 Orb F 3.5 to 6.1 MHz; GAIN, max 400 kV/turn  
 HARMONICS, RF/Orb F, used 3, 4, 5, 6  
 DEE-Gnd, max 100 kV, min gap \_\_\_\_\_ cm  
 STABILITY, (pk-pk noise)/(pk RF volt) \_\_\_\_\_  
 RF PHASE stable to  $\pm$  \_\_\_\_\_ deg  
 RF POWER input, max \_\_\_\_\_ kW  
 RF PROTECT circuit, speed \_\_\_\_\_  $\mu$ sec  
 Type CROWBAR  
 FREQUENCY MODULATION, rate \_\_\_\_\_ /sec  
 MODULATOR, type \_\_\_\_\_  
 BEAM PULSE, width \_\_\_\_\_

**VACUUM SYSTEM**

PUMPS, No., Type, Size 4 Dif. Pumps  
 OPERATING PRESSURE 1  $\mu$ Torr,  
 PUMPDOWN TIME \_\_\_\_\_ hrs

**ION SOURCES/INJECTION SYSTEM**

Stripping in the first orbit

**EXTRACTION SYSTEM**

Elect. Deflec + Mag. channels

**CONTROL SYSTEM**

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CHARACTERISTIC BEAMS

|           | Particle               | Goal (MeV)          | Achieved (MeV)    |
|-----------|------------------------|---------------------|-------------------|
| ENERGY    | $^{12}\text{C}$        | 360                 |                   |
|           | $^{20}\text{Ne}$       | 600                 |                   |
|           | $^{40}\text{Ar}$       | 600                 |                   |
| CURRENT   |                        | ( $\mu\text{A}$ )   | ( $\mu\text{A}$ ) |
|           | Internal               |                     |                   |
| External  | $^{12}\text{C}^{6+}$   | 4 e $\mu\text{A}$   |                   |
|           | $^{20}\text{Ne}^{10+}$ | 1.6 e $\mu\text{A}$ |                   |
|           | $^{40}\text{Ar}$       | .5 e $\mu\text{A}$  |                   |
| Secondary |                        | (part/s)            | (part/s)          |

BEAM PROPERTIES

|                   | Measured          | Conditions           |
|-------------------|-------------------|----------------------|
| Pulse Width       | RF deg            | $\mu\text{A}$ of MeV |
| Phase Exc, max    | RF deg            | $\mu\text{A}$ of MeV |
| Extract Eff       | %                 | $\mu\text{A}$ of MeV |
| Res, $\Delta E/E$ | %                 | $\mu\text{A}$ of MeV |
| Emittance         | (mm-mrad) { axial | $\mu\text{A}$ of MeV |
|                   | { radial          |                      |

OPERATING PROGRAMS, time dist

|                          |   |
|--------------------------|---|
| Basic Nuclear Physics    | % |
| Solid State Physics      | % |
| Bio-Medical Applications | % |
| Isotope Production       | % |
| Development              | % |

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, OPERATION SUMMARY, ADDITIONAL REFERENCES

