

ENTRY No. 12

NAME OF MACHINE **INR Cyclotron** DATE **7/21/81**
 INSTITUTION **Institute of Nuclear Research Academia Sinica, Shanghai**
 ADDRESS **Shanghai, China**
 TEL **950998** TELEX
 IN CHARGE **Chang Hong-jun** REPORTED BY

HISTORY AND STATUS 1.2^M classical cyclotron will be converted to SFC
 DESIGN, date **Model tests**
 ENG DESIGN, date **1978-1979**
 CONSTRUCTION, date **1980-1982**
 FIRST BEAM, date (or goal) **1983**
 MAJOR ALTERATIONS

COST, ACCELERATOR
 COST, FACILITY, total
 FUNDED BY
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) **138** cm, R extraction **.60** cm
 R injection **cm**
 GAP, min **14.6** cm, Field **17.1** kG }
 max **22.4** cm, Field **11.5** kG } at 0.3×10^6
 AVERAGE FIELD at R ext **14.3** kG } Ampere turns
 B max/
 NUMBER OF SECTORS { compact **3** } Spiral, max **45** deg
 separated
 SECTOR ANGLE (SSC) **9** pairs deg
 TRIMMING COILS **9** pairs

CONDUCTOR, material and type **copper**
 STORED ENERGY (cryogenic)
 POWER: main coils **80** max, kW; current stability 1×10^{-4}
 trimming coils **10** max, kW; current stability 3×10^{-4}
 WEIGHT: Fe **120** tons; coils **10** tons
 COOLING system **Demineralized water**
 ION ENERGY (bending limit) E/A = **32** q²/a² MeV/amu
 (focusing limit) E/A = q/a MeV/amu

ACCELERATION SYSTEM
 DEES, number **1**; angle **180** deg
 BEAM APERTURE **3** cm; DC Bias **kV**
 TUNED by coarse **short plate** fine **trim capacitor**
 RF **8.5** to **21.5** MHz, stable $\pm 1 \times 10^{-6}$
 Orb F to MHz
 HARMONICS, RF/Orb F, used
 DEE - Gnd, max **70** kV, min gap **3.45-3** cm
 STABILITY, (pk-pk noise)/(pk RF volt) 5×10^{-3}
 ENERGY GAIN, max **140** kV/turn
 RF PHASE, stable to \pm deg
 RF POWER input, max **100** kW
 FREQUENCY MODULATION, rate /s
 modulator, type
 beam pulse, width

VACUUM SYSTEM
 OPERATING PRESSURE 1.5×10^{-5} Torr or mbar
 PUMPS, No, Type, Size **2x1250 I/S** oil diff.

ION SOURCES **PIG type (internal only)**

INJECTION SYSTEM

EXTRACTION SYSTEM
2 channel d.c. electrostatic + mag. channel

FACILITIES FOR RESEARCH
 SHIELDED AREA, fixed **m²**; movable **m²**
 TARGET STATIONS **in rooms**
 STATIONS served at same time, max
 MAG SPECTROGRAPH, type
 COMPUTER model
 OTHER FACILITIES

CHARACTERISTIC BEAMS

PARTICLE	ENERGY (MeV)		CURRENT (μA)	
	Goal	Achieved	Internal	External
P	10-30		200	50
d	10-16		200	50
α	10-32		100	25

SECONDARY (part/s)

BEAM PROPERTIES

MEASURED CONDITIONS
 PULSE WIDTH **RF deg** μA of **MeV** ions
 PHASE EXC, max **RF deg** μA of **MeV** ions
 EXTRACT eff **%** μA of **MeV** ions
 RESOL $\Delta E/E = 8-0.3\%$ μA of **MeV** ions
 EMITTANCE
 (π mm. mrad) { **25** axial } μA of **MeV** ions
 { **25** rad }

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

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES, COMMENTS

