

ENTRY No. 125

NAME OF MACHINE Electron model relativistic ring cyc. DATE August 1978
INSTITUTION Joint Institute for Nuclear Research, Lab. Nucl. Prob. 1
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HISTORY AND STATUS

DESIGN, date 1964 Model tests 1964-66
ENG DESIGN, date 1966-67
CONSTRUCTION, date 1967
FIRST BEAM, date (or goal) 1967
MAJOR ALTERATIONS 1974, 1977
COST, ACCELERATOR
COST, FACILITY, total
FUNDED BY
ACCELERATOR STAFF, OPERATION AND DEVELOPMENT
SCIENTISTS 1 ENGINEERS 2
TECHNICIANS 2 CRAFTS 2
GRAD STUDENTS involved during year
OPERATED BY Research staff or Operators
OPERATION 25 hr/wk, On target hr/wk
TIME DISTR. in house 100% , Outside %
BUDGET, op & dev
FUNDED BY
RESEARCH STAFF, not included above
USERS, in house 14 outside
GRAD STUDENTS involved during year
RESEARCH BUDGET, in house
FUNDED BY JINR
MAGNET
POLE FACE, diameter (compact) 240. cm, R extraction 101 cm
R injection cm
GAP, min 8. cm, Field kG }
max 8. cm, Field kG } at
AVERAGE FIELD at R ext 2.06 kG } Ampere turns
B max/ }
NUMBER OF SECTORS { compact 8 } Spiral, max deg
SECTOR ANGLE (SSC) deg
TRIMMING COILS
CONDUCTOR, material and type
STORED ENERGY (cryogenic) MJ
POWER: main coils .80 max, kW; current stability 10^-4
trimming coils .20 max, kW; current stability
WEIGHT: Fe tons; coils tons
COOLING system water
ION ENERGY (bending limit) E/A = q^2/a^2 MeV/amu
(focusing limit) E/A = q^2/a^2 MeV/amu
ACCELERATION SYSTEM
DEES, number 2; angle 45 deg
BEAM APERTURE 2 cm; DC Bias kV
TUNED by, coarse MS fine VC, auto
RF 39.5 to MHz, stable +/- 5.10^-6
Orb F 39.5 to MHz
HARMONICS, RF/Orb F, used 1
DEE - Gnd, max kV, min gap 2 cm
STABILITY, (pk-pk noise)/(pk RF volt) 5.10^-2
ENERGY GAIN, max 2 kV/turn
RF PHASE, stable to +/- 5 deg
RF POWER input, max 40 kW
FREQUENCY MODULATION, rate /s
modulator, type
beam pulse, width
VACUUM SYSTEM
OPERATING PRESSURE 1 Torr or mbar
PUMPS, No, Type, Size 9 diffusion pumps
ION SOURCES electron injector (6 keV)

INJECTION SYSTEM

EXTRACTION SYSTEM
closed orbit expansion
FACILITIES FOR RESEARCH
SHIELDED AREA, fixed m^2; movable m^2
TARGET STATIONS in rooms
STATIONS served at same time, max
MAG SPECTROGRAPH, type
COMPUTER model
OTHER FACILITIES
CHARACTERISTIC BEAMS
PARTICLE ENERGY (MeV) CURRENT (pμA)
Goal Achieved Internal External
e 0.4 1000
SECONDARY (part/s)
BEAM PROPERTIES
MEASURED CONDITIONS
PULSE WIDTH 20 RF deg 100 pμA of 0.4 MeV e ions
PHASE EXC, max RF deg pμA of MeV ions
EXTRACT eff % pμA of MeV ions
RESOL ΔE/E % pμA of MeV ions
EMITTANCE
(π mm. mrad) { axial } pμA of MeV ions
{ rad }
OPERATING PROGRAMS, time distribution
BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS
BIOMEDICAL APPLICAT ISOTOPE PRODUCTIONS
Machine research 100%

REFERENCES/NOTES

PLAN VIEW OF FACILITY, NOTEWORTHY FEATURES,
COMMENTS