

ENTRY NO. FM-10  
 NAME OF MACHINE DUBNA, JINR PHASOTRON  
 INSTITUTION Joint Institute for Nuclear Research, Lab. of Nucl. Pr.  
 ADDRESS JINR, Head Post Office, P.O. Box 79, MOSCOW, USSR  
 TEL TELEX  
 IN CHARGE Pr. V.P. Dzhelepov REPORTED BY Pr. V.P. Dzhelepov

**HISTORY AND STATUS**

DESIGN, date 1967 Model tests 1968-1974  
 ENG DESIGN, date 1968-1974  
 CONSTRUCTION, date 1971-1978  
 FIRST BEAM, date (or goal) 1984  
 MAJOR ALTERATIONS

COST, ACCELERATOR 6  
 COST, FACILITY, total 18 x 10<sup>6</sup> roubles  
 FUNDED BY J.I.N.R.

**ACCELERATOR STAFF, OPERATION AND DEVELOPMENT**

SCIENTISTS ENGINEERS  
 TECHNICIANS CRAFTS  
 GRAD STUDENTS involved during year  
 OPERATED BY Research staff or Operators  
 OPERATION 156 hr/wk. On target hr/wk  
 TIME DISTR. in house 80 % Outside 20 %  
 BUDGET, op & dev  
 FUNDED BY

**RESEARCH STAFF**, not included above  
 USERS, in house 200 outside 80  
 GRAD STUDENTS involved during year  
 RESEARCH BUDGET, in house  
 FUNDED BY

**MAGNET**

POLE FACE, diameter (compact) 600 cm, R extraction 270 cm  
 R injection cm  
 GAP, min 15-30 cm, Field 18 kG  
 min 120 cm, Field 12 kG at 1,35 10<sup>6</sup>  
 AVERAGE FIELD at R ext 16,3 kG Ampere turns  
 B max/ < B > 1,2  
 NUMBER OF SECTORS { compact } Spiral, max 77 deg  
 { separated }  
 SECTOR ANGLE (SSC) deg  
 TRIMMING COILS Harmonic correction : 3/Sector

CONDUCTOR, material and type Al  
 STORED ENERGY (cryogenic) 10 MJ  
 POWER: main coils 1100 max, kW; current stability 5, 10<sup>-5</sup>  
 trimming coils max, kW; current stability  
 WEIGHT: Fe 7000 tons; coils 165 tons  
 COOLING system Demineralized water  
 ION ENERGY (bending limit) E/A = q<sup>2</sup>/a<sup>2</sup> MEV/amu  
 (focusing limit) E/A = q/a MeV/amu

**ACCELERATION SYSTEM**

DEES, number 1 180 deg  
 BEAM APERTURE 7-10 cm; DC Bias 2 kV  
 TUNED by, coarse VC fine  
 RF 18,8 to 14,0 mHz, stable ±  
 Orb F 18,2 to 14,4 mHz  
 HARMONICS, RF/Orb F, used 1  
 DEE-Gnd, max 50 kV, min gap cm  
 STABILITY, (pk-pk noise)/(pk RF volt)  
 ENERGY GAIN, max 80 kV/turn  
 RF PHASE, stable to ± deg  
 RF POWER input, max 300 kW  
 FREQUENCY MODULATION, rate 600 /s  
 modulator, type  
 beam pulse, width

**VACUUM SYSTEM**

OPERATING PRESSURE 2-5 Torr or mbar  
 PUMPS, No. Type, Size 3 diffusion pumps

**ION SOURCES**  
 Fig type

**INJECTION SYSTEM**

**EXTRACTION SYSTEM**

Iron-current channel, 65%

**FACILITIES FOR RESEARCH**

SHIELDED AREA, fixed 1500 m<sup>2</sup>; movable m<sup>2</sup>  
 TARGET STATIONS 4-7 in 2 rooms  
 STATIONS served at same time, max 2-3  
 MAG SPECTROGRAPH, type  
 COMPUTER model EC-1040, EC-1010, HP  
 OTHER FACILITIES Isotope production M-5, M-6, MU  
 Medico-Biological complex, YASNAPP

**CHARACTERISTIC BEAMS**

PARTICLE	ENERGY (MeV)		CURRENT (µA)	
	Goal	Achieved	Internal	External
p	680	680		
SECONDARY (part/s)				

**BEAM PROPERTIES**

MEASURED	CONDITIONS	
	RF deg	µA of MeV ions
PULSE WIDTH	RF deg	µA of MeV ions
PHASE EXC. max	RF deg	µA of MeV ions
EXTRACT eff	%	µA of MeV ions
RESOL ΔE/E	%	µA of MeV ions
EMITTANCE (π mm. mrad)	{ axial } { rad }	µA of MeV

**OPERATING PROGRAMS**, time distribution

BASIC NUCLEAR PHYSICS SOLID STATES PHYSICS  
 BIOMEDICAL APPLICAT. ISOTOPE PRODUCTIONS

**REFERENCES/NOTES**

- 1)
- 2)

**PLAN VIEW OF FACILITY, COMMENTS, ETC.**