Entry: CM18
Machine Name: MGC-20
Address: 189631, St. Petersburg, Russia
In Charge of the cyclotron: M.F. Vorogushin
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Date: June 15, 1998
Institution: D.V. Efremov Institute
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HISTORY

Design: 1970
First machine: 1974
Sales: 8
Sold/Operational:
Currently available:

CHARACTERISTIC BEAMS

ions/energy/current/power:
- p / 5-20 MeV / 50 μA
- d / 3-10 MeV / 50 μA
- ^{4}He / 6-20 MeV / 25 μA
- ^{3}He / 8-24 MeV / 25 μA

transmission efficiency (total)
- **typical**: ..... % - **best**: ..... %

transverse emittance
- **vertical**: ..... π mmmrad
- **horizontal:** ..... π mmmrad

longitudinal emittance (rms): ..... ΔE/E.deg RF

TECHNICAL DATA

a) magnet
type: warm
Kb: ..... MeV/A **Kf**: ..... MeV/A
average field (min-max): 0.65 - 1.48 ..... T
number of magnet sectors: 3
- **angle**: 90 ..... deg - **spiral (max)**: 35 ..... deg

pole parameters
- **diameter**: 1.03 ..... m
- **injection radius**: ..... m
- **extraction radius**: 0.45 ..... m

hill gap: 0.072 ..... m **valley gap**: 0.12 ..... m
field trimming
- **trim coils**
  - **number**: 4 ..... - **current (max)**: 15 ..... A
- **harmonic coils**
  - **number**: 2 ..... - **current (max)**: 10 ..... A
- **others**
  - **number**: ..... - **current (max)**: ..... A

main coils:
- **number**: 1
- **Ampere-turns**: $1.2.10^5$ ..... A.T.
- **current**: 420 ..... A

stored energy: ..... MJ
weight of iron: 24 ..... t
weight of coils: 1.2 ..... t
power
- **main coils**: 35 ..... kW
- **trim coils (max)**: 0.2 ..... kW
- **refrigerator (cryogenic)**: ..... kW

b) RF
- acceleration
- **frequency range**: 8 - 24 .....
MHz
- **harmonic modes**: 1, 3
- **number of dees**: 2
- **angular aperture**: 180 - 140 ..... deg
- **voltage:- average (min-max)**: 25 - 30 ... . kV
  - **variation with radius**: .....
  - .....
- **power in (max)**: 50 ..... kW
- **stability: - phase**: ±5 .... deg - **voltage**: 0.1 ... %

- 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:
- external (radial/axial):
- **elements**:
  .....
- **source voltage**: ..... kV
- **injection energy:** ..... MeV/n
- **buncher**: .. .. ..

- injection efficiency: ..... %

d) ion sources/injector
Livingston type
.....

e) extraction
- elements, characteristics:
- electrostatic deflector
- passive magnetic channel
- .....
- .....
- .....

- efficiency
- **typical**: 50 ..... % - **best**: ..... %

f) vacuum
- **pumps**: 3 diffusion pumps
  .....
- **achieved vacuum**: 10^{-4} ..... Pa

REFERENCES

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VIEW OF THE CYCLOTRON

COMMENTS

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