THE LEWIS RESEARCH CENTER ISOCHRONOUS CYCLOTRON CONVERSION

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Table I: General Description

Magnet
Pole, diameter 163 cm; Gap, min 17 cm
Sectors, number 3; Spiral, max 0 °
AVF Coils 0 pairs/sector
Circular Trim Coils 8 pairs
Av. Field at r max 14 kG
Magnet Power, max, kW
Main 123, AVF 0, Trim 27

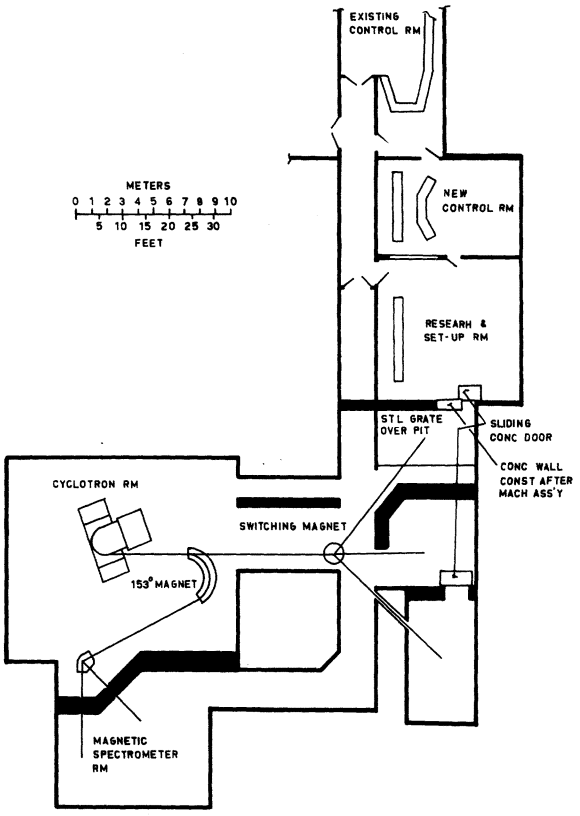
RF System
Dees 2; Width 144 °; Aperture, min 4.4 cm
Frequency range 13.5 to 27 MHz
Dee tuning by Moving panels
Energy gain, max 280 keV/turn
PA (or oscillator) output, max 340 kW

Status
Study X, Design ____, Const. ____
To operate ____, Operating since ____
Now used ____ hr/day, ____ days/week
Beam on target averages ____ hr/day

Beam
Energy and Particle 53 MeV proton
also d, ^{3}He, ^{4}He and heavy ions
Current, int. 1000 μA; ext. 500 μA
Extraction Radius 71 cm
External target stations available 5

Shielded areas (concrete)
Vault 186 m^2; walls 2 m thick.
Exp. Rooms 236 m^2; walls dirt m thick.

A conversion of the present 60-inch cyclotron is being planned. The conversion will follow as closely as possible the design of the Cyclotron at Michigan State University and it is believed that its performance will be substantially the same. An attempt will be made to produce a 2:1 frequency range either by permanent changes in the transition region or by removable inserts. It is our intention to retain the present magnet yoke, main magnet coils and power amplifier anode supply. Some changes may be made in the final amplifier to adopt it to our power supply. Magnet measurements will be made to determine the feasibility of using all or part of the present coils and to define the necessary changes in the magnet structure. The beam of the modified cyclotron will emerge at an angle of 90° to the present direction. This circumstance will enable us to utilize a storage vault as a new beam room. The present beam room will be used for high resolution spectroscopy as there is sufficient room in the cyclotron vault to install a beam analysis system. A new control room will be built to shorten the down time for conversion.



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