

THE THEORY OF NUCLEAR MAGNETIC RESONANCE AND
THE STUDY OF THE HOMOGENEITY OF A MAGNETIC FIELD



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ABSTRACT

The basic theory of the nuclear magnetic resonance plays an important role in research about this field. The simple application of N M R is a study of the homogeneity of the magnetic field. Its homogeneity was studied by measuring the magnetic field strengths at various positions in the magnetic pole gap. We used the nucleus of Glycerol with the oscillating field of the r.f. oscillator unit as a magnetic probe to determine the magnetic field. The resonant frequency was observed by the help of the Cathode Ray Oscilloscope and the magnetic field strengths were obtained. From the results, its homogeneity was discussed. It was found that the inhomogeneity of the magnetic field of the Tickford electromagnet, in the Electronics Laboratory of the Physics Department, was about 1 in 5×10^3 over one c.c. volume. The relation between the magnetic field strengths and the d.c. current supply of the electromagnet was also measured. The study of the performance of the storage batteries was also investigated. Further detail investigation of the battery performance is suggested.



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