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A PROPOSAL FOR THE PURCHASE OF AN ON-LINE COMPUTER

SUMMARY

In order to utilise efficiently the large heavy liquid bubble chamber Gargamelle, at CERN, it is shown that scanning and measuring with computer on-line facilities are necessary.

It is proposed that NPA should purchase a medium size computer immediately in order that the on-line system be working and proven on arrival of Gargamelle in 1969. After comparing several computers we propose the purchase of a CDC 3100.

INTRODUCTION

Over the past few years the number of heavy liquid experiments has increased and consequently the need to obtain results more quickly and more efficiently has become an important problem.

The main properties of heavy liquids are large stopping power and small radiation lengths. However, the study of many elementary particles is impossible in complex nuclei due to the interactions within the nucleus which either destroy the particle or its initial kinematical properties. The compromise solution is to use heavy liquids containing hydrogen and in the analysis select only the interactions which have taken place on the hydrogen. The majority of heavy liquid experiments now proposed require hydrogen rich liquids. These liquids inherently have long radiation lengths and hence poor γ detection efficiency.

One way, however, to obtain high γ detection efficiencies with these liquids is to construct a bubble chamber of very large volume. Such a large chamber, Gargamelle, is being constructed by France and will arrive at CERN in 1969.

Essentially the chamber is in the form of a cylinder with its axis horizontal. It is 4.40 metres long and 1.92 metres in diameter. The effective sensitive volume is expected to be $\sim 10\ m^3$.