

“1. Introduction

While the detector is being used to study hadronic production processes it is possible to simultaneously collect data relevant to the following questions:

- (1) Are there charged leptons with masses greater than that of the muon?

We normally think of the charged heavy leptons as having spin $\frac{1}{2}$ but the search method is not sensitive to the spin of the particle. This search for charged heavy leptons automatically includes a search for the intermediate vector boson which has been postulated to explain the weak interactions. This is discussed in Section 8.

- (2) Are there anomalous interactions between the charged leptons and the hadrons?

In this part of the proposal we show that using the detector we can gather definitive information on the first question within the available mass range. We can obtain preliminary information on the second question - information which will be very valuable in designing further experiments relative to that question. We can gather all this information while the detector is being used to study hadronic production processes. Additional running will be requested if the existence of a heavy lepton, found in this search, needs to be confirmed. This is discussed in Section 5.”

G. LEPTON SEARCHES AT ADONE

While SPEAR and the Mark I detector were being built, lepton searches (Zichichi³⁰) were being carried out at the ADONE e^+e^- storage ring by two groups of experimenters in electron-positron annihilation physics: One group led by Antonino Zichichi reported in 1970 and 1973 (Alles-Borelli *et al.*³¹, Bernardini *et al.*³¹). In the later paper they searched up a mass of about 1 GeV for a conventional heavy lepton and up to about 1.4 GeV for a heavy lepton with decays restricted to leptonic modes.

The other group of experimenters in electron-positron annihilation physics was led by Shuji Orito and Marcello Conversi. Their search region (Orito *et al.*³³) also extended to masses of about 1 GeV.

Details on these lepton searches at ADONE were given by Antonino Zichichi in his talk at this meeting.