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LNF-74/64(P)
7 Dicembre 1974

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ANGULAR DISTRIBUTION AT TOTAL C. M. ENERGIES
AROUND $\sqrt{s} = 3.1$ GeV.

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OBSERVATION OF A POSSIBLE ANOMALY IN THE μ -PAIR ANGULAR
DISTRIBUTION AT TOTAL C.M. ENERGIES AROUND $\sqrt{s} = 3.1$ GeV.

We have observed at ADONE, an asymmetry effect in the angular distribution of μ -pairs produced in the reaction

$$(1) \quad e^+e^- \longrightarrow \mu^+\mu^-$$

in the energy region around the recently discovered^(1, 2, 3) 3.1 GeV resonance.

Some information on the experimental apparatus, which includes a magnetic analyzer (MEA) is contained in a forthcoming paper⁽⁴⁾, where the dependence of the cross section for this reaction on $\sqrt{s}$ is also reported.

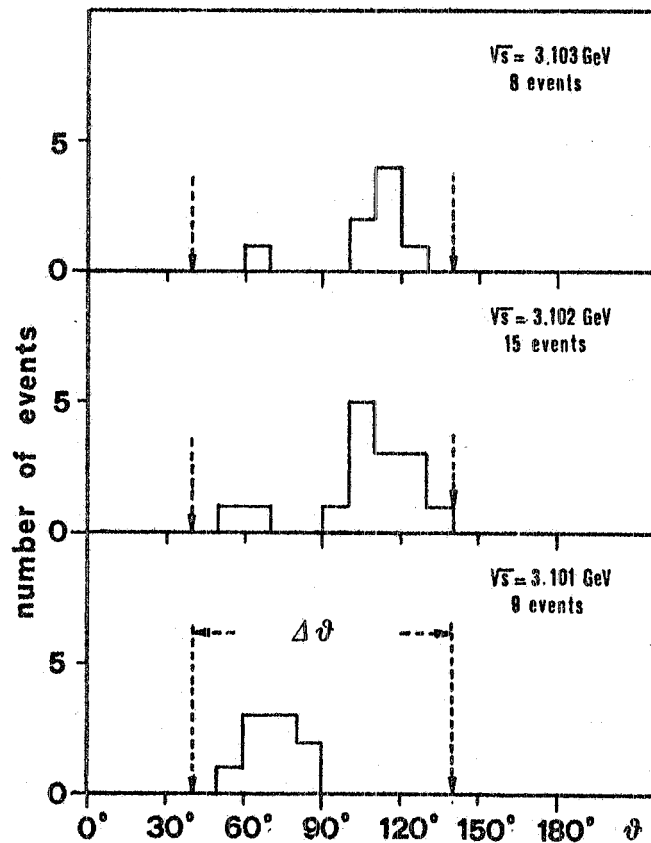
The results, referring to a sample of 32 analyzed events, are shown in Table 1 and in Fig. 1. θ is defined as the angle between the direction of the μ^+ and the direction of the incoming e^+ . The energy at which

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2.

TABLE I - Number of μ -pair events as a function of the angle θ for 3 different values of $\sqrt{s}$.

$\sqrt{s}$ (GeV)	$\theta = 40^\circ - 90^\circ$	$\theta = 90^\circ - 140^\circ$
3.103	1	7
3.102	2	13
3.101	9	0
Total	12	20



the cross-section for the process $e^+e^- \rightarrow$ many-hadrons reaches its maximum is $\sqrt{s} = 3.102$ GeV.

One observes an excess of events at $\theta < 90^\circ$ below the resonance, and an opposite effect above it. Although this result is very preliminary it is unlikely to be due only to a statistical fluctuation.

By studying the multi-hadronic data, we have performed a first check of the symmetry of the apparatus which showed no evident systematic asymmetry with respect to charge detection. At present we are increasing the statistics and we are performing a number of additional tests on possible biases of the apparatus.

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