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LNF-74/64(P)
7 Dicembre 1974

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B. Bartoli[x], D. Bisello[o], B. Esposito, F. Felicetti, P. Monacelli[+], M. Nigro[o], L. Paoluzi[+], I. Peruzzi, G. Piano Mortari[+], M. Piccolo, F. Ronga, S. Sebastiani[+], L. Trasatti[+] and F. Vanoli[x]:

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) $$e^+e^- \longrightarrow \mu^+\mu^-$$

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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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

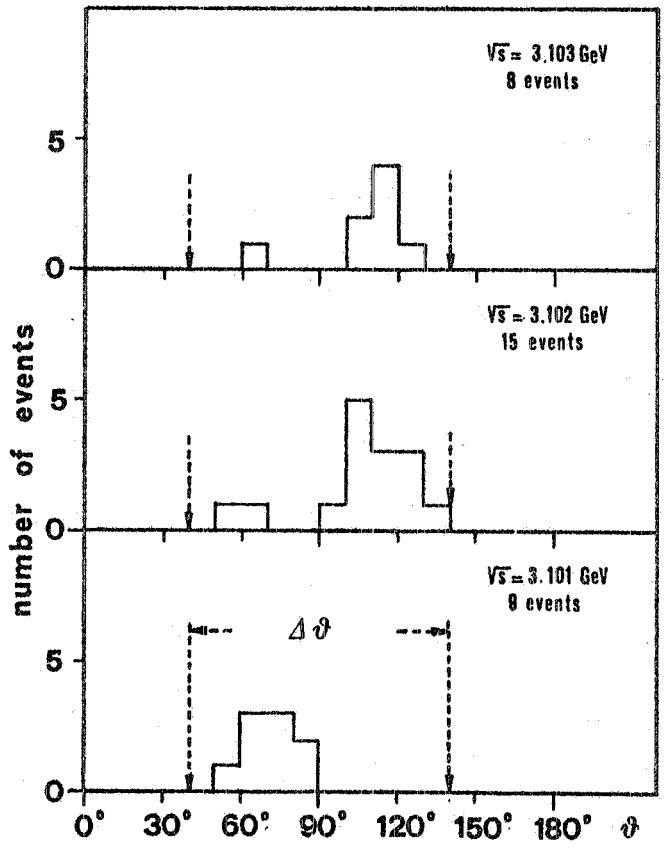

FIG. 1 - Angular distribution of collected μ-pair events for 3 different total C. M. energies. $\Delta\theta$ defines the angular acceptance of the apparatus.

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

One observes an excess of events at $\theta < 90^o$ 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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