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### Title

Study of  $w_0D^{++}$  and  $r_0D^{++}$  Production at 3.7 GeV/c

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Study of  $\omega^0\Delta^{++}$  and  $\rho^0\Delta^{++}$  Production at 3.7 GeV/c.\*

G. S. ABRAMS, W. R. BUTLER, D. G. COYNE, G. GOLDHABER, B. H. HALL, J. MACNAUGHTON, G. H. TRILLING, Lawrence Radiation Laboratory, Berkeley.--A study of the reactions  $\pi^+p \rightarrow p\pi^+\pi^+\pi^-$  (15 000 events) and  $\pi^+p \rightarrow p\pi^+\pi^+\pi^-\pi^0$  (16 000 events) has been made using a separated  $\pi^+$  beam at the Bevatron with momenta spanning the interval 3.7-4.0 GeV/c. The exposure in the LRL 72-inch hydrogen bubble chamber of 180 000 pictures has yielded 3000  $\rho^0\Delta^{++}$  and 2000  $\omega^0\Delta^{++}$  events. We find that  $\rho_{00}(d\sigma/dt)$  dominates both reaction cross sections, implying for the  $\omega^0\Delta^{++}$  reaction the importance of amplitudes other than those expected from the leading Regge singularity (for the  $\omega^0\Delta^{++}$  reaction the  $\rho$  trajectory). The decay distributions as functions of  $t'$  ( $= t - t_{\min}$ ) are shown to be rich in structure; e.g., dips in  $\rho_{00}(d\sigma/dt)$  near  $t' = 0$  and  $t' = -0.18$  (GeV/c)<sup>2</sup> are found for the  $\omega^0\Delta^{++}$  reaction, and a dip in  $\sigma_1^+ = (\rho_{1,1} + \rho_{1,-1})/2$  near  $t' = -0.2$  appears in the  $\rho^0\Delta^{++}$  reaction. Accommodation of our results within various Regge models will be presented.

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<sup>1</sup>G. Goldhaber et al., Phys. Rev. Letters 23, 1351 (1969).

Submitted by

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