will be even more effective for the measurement of the photoproduction of π mesons from deuterons close to threshold using heavy polyethylene.

In conclusion the authors express their gratefulness to Professor P. A. Cerenkov for his interest in the work.

*At the energy $E_{\gamma max}$ = 175 Mev mesons at this angle can be produced only in reactions (1) and (2).

†Comparing the thresholds for π^+ and π^- production one can easily see that the ratio π^-/π^+ at $E_{\gamma max}$ = 175 Mev is practically the same as that found at $E_{\gamma max}$ = 250 Mev.[6]

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Translated by M. Danos
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A NOTE ON THE ANISOTROPY IN THE ANGULAR DISTRIBUTION OF PARTICLES FROM NUCLEAR INTERACTIONS AT 10^{12} ev.

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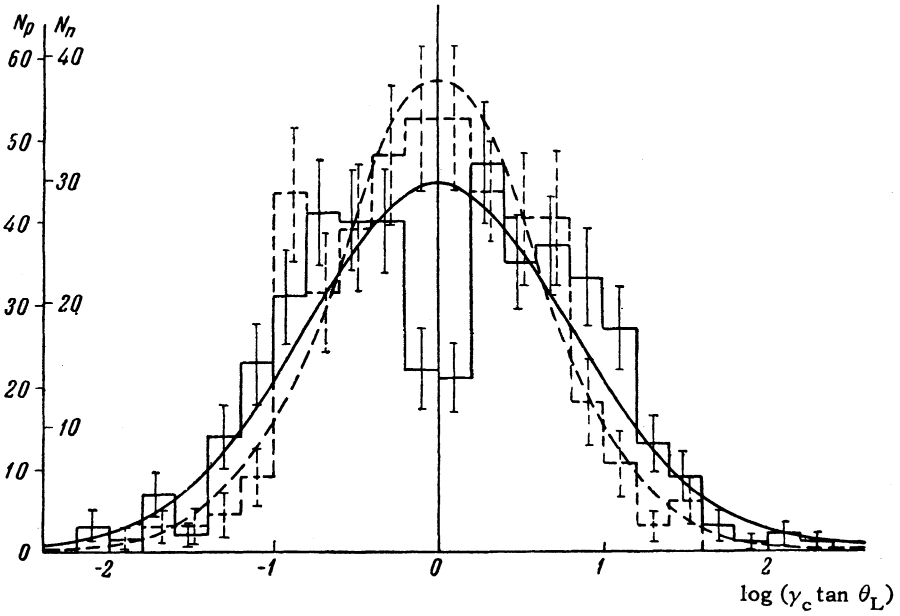
Submitted to JETP editor January 7, 1961

J. Exptl. Theoret. Phys. (U.S.S.R.) **40**, 976-977 (March, 1961)

In the work of Gierula et al.[1] it was shown that the angular distribution of secondary particles from nuclear interactions with primary energy $> 10^{12}$ ev has a significant anisotropy and that besides the anisotropy, characterized by $\sigma > 0.6$, there is a structure with two maxima. This result was confirmed in reference 2.*

We would like to point out that the interactions produced by charged particles (p) have, on the average, a greater anisotropy than those with neutral (n) primaries. We show in the figure the distribution of values of $\log(\gamma_c \tan\theta_L)$ separately for the groups with p primaries (solid curve) and n primaries (dashed curve). The first group includes 19 cases with $\langle\gamma_c\rangle = 54$, predominantly from the literature. In the n interactions there are 13 cases with $\langle\gamma_c\rangle = 44$. We determined the anisotropy with the aid of σ as in reference 1; for the group p we have $\sigma = 0.82$, and for the n distribution we obtained $\sigma = 0.64$.



A similar result was obtained for lower energy interactions investigated in our laboratory. A group of 45 p interactions with $\langle\gamma_c\rangle = 8$ has $\sigma = 0.6$ while a group of 11 n interactions with $\langle\gamma_c\rangle = 8.3$ has $\sigma = 0.5$.

We think that the smaller interaction anisotropy is not due to inaccuracy in the determination of the axis, because the distribution of particles in a wide cone, which is not very sensitive to the choice of axis, reveals this effect even better than that in a narrow cone. Finally, the random character of the choice of individual events from the literature could have affected our results as shown in the figure to some extent, but in the low energy p and n groups, the method of selection has practically no effect; they were obtained by scanning the same volume of emulsion.

We think that the average anisotropy in the p group is increased by the contribution of interactions produced by mesons, while the n group consists of interactions produced only by neutrons. A more detailed analysis will be published in the Czechoslovakian Physics Journal.

*The authors thank Professor J. Gierula for sending this preprint.

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CONSECUTIVE INTERACTIONS OF HEAVY NUCLEI OF THE PRIMARY COSMIC RADIATION

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Submitted to JETP editor January 7, 1961

J. Exptl. Theoret. Phys. (U.S.S.R.) 40, 978-979 (March, 1961)

CONSECUTIVE interactions of heavy nuclei, and interactions in a beam of their several fragmentation products ("parallel interactions") are interactions of particles having an identical energy per nucleon, and their investigation may therefore yield information on possible asymmetries in the angular distribution of the particles produced.

We summarize here preliminary results obtained in a stack of nuclear emulsions irradiated during the 1955 Po-valley expedition. We have, so far, found six pairs of consecutive or parallel interactions of heavy nuclei. Their characteristics are shown in the table. N_h denotes the number of evaporation tracks, Z is the charge of the incident nucleus, Z_i are the charges of the fragmentation products, γ_c is determined from the relation $\log\gamma_c = \log\cot\theta_i$, n_1 and n_2 are the number of particles in the narrow and wide cone, respectively, divided by γ_c, and n_1' and n_2' are the number of particles in the cones divided by γ_c', where $\gamma_c' = (\gamma_1\gamma_2)^{1/2}$.

It should be noted that the values of γ_c in separate interactions of a pair differ considerably in

№	N_h	Z	Z_i	n_s	γ_c	$n_1 : n_2$	γ_c'	$n_1' : n_2'$
			Consecutive interactions					
208 a	0	~15	$Z_1=2,\ Z_2=4,\ Z_3=5$	25	23±5	11 : 9	17	15 : 5
208 b	26	2		32	2.6±0.5	17 : 15	2.5	17 : 15
232 a	14	~6	$Z_1=Z_2=2$	30	1.4±0.3	12 : 10		
232 b	1	2		5	3.7±1.8	2 : 2	3.7	2 : 2
203 a	0	~17	$Z_1=Z_2=2,\quad Z_3=12$	15	27±7	7 : 7	27	7 : 7
203 b*	16	~12		115	9.5±1	56 : 56	7	65 : 47
207 a	0	~18	$Z_1=2,\quad Z_2=13$	9	8.8±3.5	3 : 3	8.8	3 : 3
207 b	4	~13	$Z_1=Z_2=2$	20	4.5±1.3	6 : 5	3.4	6:5
			Parallel interactions					
9	4	~5		47	8.3±1.2	25 : 17	7	26 : 16
227	35	2		38	3.1±0.5	17 : 19	3.2	17 : 19
190	12	2		51	15.5±2.2	22 : 28	18	22 : 28
191	29	~17	$Z_1=4,\quad Z_2=Z_3=2$	160	21.6±1.7	80 : 75	17	94 : 61

*The angular distribution of particles for the case 203b has been kindly reported to us by Dr. E. Fenyves from Budapest. The events 203a and 203b are described in reference 1.