STUDY OF SECONDARY PARTICLES PRODUCED IN CENTRAL ^{12}C-NUCLEUS REACTIONS AT 4.5AGev.

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Introduction

Study of secondary charged particles produced in central relativistic heavy ion interactions is attracting a great deal of attention during the recent years[1-7].It may be due to the fact that the study of totally disintegrated events produced in heavy ion collisions in which almost the whole projectile takes part in the reactions[1-7].

Experimental technique

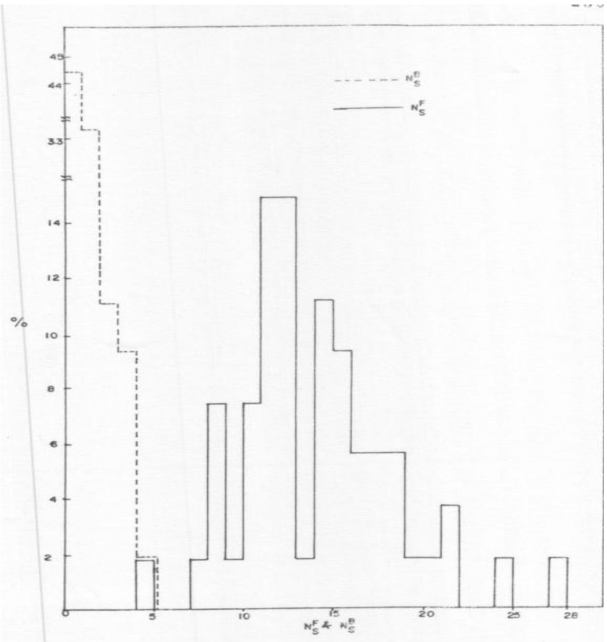
In the present work an emulsion stack of several pellicles of NIFKI-BR2 type is used. The size of each pellicle is 18.7×9.7×0.06cm^3.The stack was exposed by 4.5AGev carbon nuclei at Dubana synchrophasotran,Russia.a random sample of 681 events were picked up by using along the track doubly scanning method. All the experimental details may be found in our earlier publication [2]

Experimental Results and Discussion

It is reported that the events with $N_h \geq 28$, where N_h denotes the heavily ionizing tracks with $\beta \leq 0.7$, may be taken as the events produced in total disintegration of AgBr [1-7].The reason for choosing such events for various analysis may be due to the fact that these events correspond to the total charge close to the average charge of Ag and Br (Z=41) and hence they cause a very large degree of breakup of the target nucleus. In order to examine the behavior of the charged shower particles in the forward ($\theta \leq 90$) and backward ($\theta \geq 90$) hemispheres produced in the totally disintegrated events in case of ^{12}C-nucleus interactions at 4.5AGev/c, we have displayed the multiplicity distribution of shower particles in the figure. It may be seen from the figure that the multiplicity distribution of charged shower particles in the forward hemisphere is flatter than the multiplicity distribution in the backward hemisphere. The average values of charged shower particles in the forward hemisphere, $\langle N_S^F \rangle$ and backward hemisphere, $\langle N_S^B \rangle$, their dispersions, the forward to backward ratio, F/B and the asymmetry parameter, A_s obtained in the present work are listed in the table . The average values of multiplicities of shower particles, which have been listed in the table, indicate that the probability of the forward emission is much higher than that for the backward emission. This fact is also reflected from the values of forward to backward ratio. Furthermore, the asymmetry parameter defined as A= (F-B)/ (F+B) is also estimated for totally disintegrated events in^{12}C-nucleus interactions at 4.5 GeV per nucleon.

$<N_S^F>$	**$D<N_S^F>$**	**$D<N_S^F>/<N_S^F>$**	**$<N_S^B>$**
13.57± 0.50	4.29±0.41	0.32±0.03	0.91±0.13

$D<N_S^B>$	**$D<N_S^B>/<N_S^B>$**	**F/B**	**A_s**
1.4±0.19	1.14±0.19	14.96±2.57	0.87



Conclusion

On the basis of the study of the totally disintegrated events of Ag and Br nuclei caused by 4.5 GeV per nucleon carbon projectile, we may conclude that the distribution of charged shower particles produced in forward hemisphere is flatter than the distribution in the backward hemisphere.

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