

SEARCH FOR THE CUMULATIVE EFFECT IN NUCLEUS-NUCLEUS INTERACTIONS  
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High energy  $^{12}\text{C} - ^{12}\text{C}$  and  $^{12}\text{C} - \text{Ta}$  interactions were investigated by the bubble chamber method and a scanning was done for backward scattered protons that could be emitted due to the cumulative effect. This effect, proposed by Baldin<sup>1</sup>, explains the appearance of particle momenta kinematically unallowed in free nucleon interactions. Baldin introduces a kinematic parameter, the cumulative number  $Q$ , for high energy incident particles, as follows

$$Q = \frac{E - pc \cos \theta}{m}$$

where  $E$  is the total energy of the cumulative particle,  $p$  its momentum and  $m$  its rest mass. The incident particles were in our case  $^{12}\text{C}$  ions of 4.2 GeV/c momentum satisfying the high energy condition.

In this experiment only fast protons were considered since fast pions, whose momenta exceed the kinematically allowed value for nucleon-nucleon interaction, have tracks of unmeasurable length in the bubble chamber. The calculated cumulative numbers  $Q$  indicate that the order of cumulation for considered interactions is not greater than two.

Presently only a part of the experimental material was scanned for this effect and a better statistics is hoped for.

References:

1. A.M. Baldin, Preprint OIYaI P7 5769, Dubna, 1971.
2. V.S. Stavinsky, Particles & Nuclei Vol. 10 Part 5, Moscow, 1979.