

**FORWARD-
BACKWARD
PARTICLE
CHARACTERISTICS
IN THE
INTERACTIONS
OF ^3He
AND ^4He
WITH
EMULSION
NUCLEI
AT 3.7A
GeV**

M.El-Nadi,
A.Abdelalam, M.S.
El-Nagdy, E.
A.Shaat, N.
.Ali
Mossa, Z.
Abou
Moussa,
S.Kamel,
N.Rashed,
M.E.Hafiz
and
B.Badawy
Physics
Department, Faculty
of
Science, Cairo-
Egypt
sayedks@hotmail.com

Experimental data
on
relativistic
(shower)
and fast
(grey)
hadrons
emitted in
the
forward
($q < 90^\circ$)

) and backward
($q \geq 90^\circ$)
hemispheres in the
interactions of 3.7A
GeV
helium
isotopes
(^3He and
 ^4He) with
emulsion
nuclei are
presented
and
analysed.
The
dependence of the
probabilities of the
interactions
is
accompanied by
backward
relativistic
($n_s^b > 0$)
and fast
($N_g^b > 0$)
) hadrons
on the
projectile
and target
sizes are
studied.
The
multiplicity
distributions and
mean
values of
both
forward
and
backward
shower
and grey
particles
are
investigated for the
total
samples
as well as
for events

having

$$n_s^b > 0, N_g^b > 0$$

and

different

projectile

spectator

charges.

The data

showed

that while

the values

of the

average

multiplicit

y of the

produced

forward

shower

particles

are

strongly

dependent

on the

projectile

mass

number,

A_p , those

of the

backward

ones are

nearly

independe

nt of A_p .

Conseque

ntly, the

present

study

yields

quite

interesting

informatio

n

regarding

the

mechanis

m of the

backward

particle

productio

n in heavy

ion

interactio

ns.