

Study of Target Fragmentation in Heavy Ion Interactions at 3.7A GeV

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Introduction

- We study the target fragmentation region. This region is further classified according to the emulsion nomenclature into two main groups of particles namely the black ($E \leq 26$ MeV for protons) and grey particles ($26 < E \leq 400$ MeV for protons). The fast (grey) and slow (black) target associated particles produced in relativistic heavy – ion reactions are a quantitative probe of the cascading processes in the spectator parts of the target nucleus . These spectators of the reaction are excited primary fragments which then decay into the final fragments by a sequence of evaporation steps .
- On the other hand, in free nucleon – nucleon collisions, the hadron emission in the backward hemisphere of the interactions (BHS) is kinematically restricted. The study of hadron emission beyond the kinematic limits ($\theta_{\text{Lab}} \geq 90^\circ$) in nucleus – nucleus collisions reveals signatures for a collective mechanism recognizing such emission. Therefore, it was concluded that , the backward particle production is a consequence of a decay of a highly excited target system after the forward particle emission. This backward production is mainly dependent on the target.