

THE INCLUSIVE Λ BARYON PRODUCTION IN MULTIJETS

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1. Introduction

The baryon production rates are sensitive to different hadronization mechanisms, in particular, the enhancement of baryons production rates can not be satisfactorily explained by some phenomenological models^[1]. In LEP energy region the jet effect become more obvious which is directly related to partons by the parton-jet matrix,^[2] i.e. the fraction of multijet configuration defined by JADE algorithm depending on Y_{cut} is related to initial partons ($q\bar{q}, q\bar{q}g, q\bar{q}gg\dots$). Thus, the difference of the multiplicities between quark and gluon jets as well as between heavy flavour and light quark jets are interesting^[3,4]. Furthermore, with Shangdong quark combinational model^[5] the different baryon multiplicities referring to different jets are investigated^[4]. This motivates that except those parameters as multiplicity, jet width angle, energy distribution etc, trying to measuring multiplicities of specific baryons in different kind jets, at least in 2-3-4-5 jets are attractive which helps to know the essence of fragmentation of gluon and quarks or more detailed, with or without heavy flavours. As the fundamental step, here the Λ multiplicities in different multi-jets are measured.

2. Datasets and Selection Conditions

The data of 100000 events from 1991 and 90000 events from 1993 $q\bar{q}$ (class 16) and 144136 events of Monte Carlo Jetset 7.3 are used.

The selection conditions of Λ used here have been discussed in our last note and very low backgrounds have been obtained^[6].

3. Results

The multiplicity of Λ per jet for 2-3-4-5 jets under different Y_{cut} (0.02, 0.04) are shown in Tab.1 and Tab.2, in which no significant feature of 3-4 jets including gluon jet components are shown with respect to 2 jets standing for only $q\bar{q}$. The multiplicity of Λ per jet in

2-3-4-5 jets slightly decreases smoothly for $Y_{cut}=0.02$, but for $Y_{cut}=0.04$ the multiplicities of Λ per jet for 5 jets is anomalously large both for MC and data which is now being analyzed.

Table 1:

ycut=0.02	Number of Λ /jet			
	2 jet	3 jet	4 jet	5 jet
MC	0.1562 ± 0.0013	0.1322 ± 0.0009	0.1275 ± 0.0021	0.1111 ± 0.0089
91 data	0.1567 ± 0.0048	0.1333 ± 0.0046	0.1288 ± 0.0113	0.1122 ± 0.0541
93 data	0.1557 ± 0.0050	0.1326 ± 0.0049	0.1294 ± 0.0118	0.1091 ± 0.0569

Table 2:

ycut=0.04	Number of Λ /jet			
	2 jet	3 jet	4 jet	5 jet
MC	0.1642 ± 0.0011	0.1442 ± 0.0012	0.1383 ± 0.0045	0.1733 ± 0.0848
91 data	0.1652 ± 0.0040	0.1452 ± 0.0055	0.1406 ± 0.0227	0.1701 ± 0.4005
93 data	0.1635 ± 0.0042	0.1454 ± 0.0057	0.1418 ± 0.0240	0.1788 ± 0.4133

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