The Comparison of BES Reconstruction System of the HP-V101 and LINUX-V101

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1 The Introduction

In order to push the application of the PC-LINUX system on the BES offline data analysis system, Zhang Lie and others people did lots of contribution on this field, and created the BES PC-LINUX-V101 on the the beslx01(PC-II350) which is emigrated from HP BES V101. The PC-LINUX-V100 was created on the beslx01 also. some people did some checks between those two system before. As the BES-LINUX system will be used for the BES offline data analysis, we should make the checking widely and exactly between this two system. The main jobs in this field will been pay attention to the **BES-SIMULATION CODES, EVENTS RECONSTRUCTION CODES and PHYSICS ANALYSIS CODES.** It will be separated further into SOBER, SIMBES, DRUNK, FILTER and USER UTILITY subroutines. In this note, we just describe the status of the event reconstruction codes.

2 The iterms that we checked at first step

2.1 The Review of the BES Events Parameters-Track list

- Subtype 1: Track Identification Block
- Subtype 2: free
- Subtype 3: Main Drift Chamber (MDC) One-Track Fit
- Subtype 4: Time-Of-Flight Counter Items
- Subtype 5: Shower Counter Track
- Subtype 6: Muon Chamber Items
- Subtype 7: dE/dX Information
- Subtype 8: Vertex Constrained Track Fit
- Subtype 9: Main Drift Chamber (MDC) Raw data Pointers
- Subtype 10: Shower Counter (SC) Pointers
- Subtype 11: Projected/Decay Coordinates Of MDC Tracks
- Subtype 12: Reconstructed (virtual) Track
- Subtype 13: Vertex Chamber (VC) One-Track Fit
- Subtype 14: Vertex Chamber (VC) Raw data Pointers
- Subtype 15: Projected/Decay Coordinates Of VC Tracks
- Subtype 16: MDC-VC tracks matching information

2.2 What iterm we will check at first step

parameter	**No. par.**	Respons
subtype 1	15	All Mao
subtype 3	35	Qiuj, Mao
subtype 4	34	Xie
subtype 5	29	Wang wenfon
subtype 6	5	
subtype 7	18	Qiu Mao
subtype 11	38	Qiu Mao
subtype 13	35	Yuan
subtype 16	38	Yuan
Total par.	247	

2.3 the data sample and the constants used for this note

- /data/d54/bescal/flt_keep/run12064.flt
- /bes/bes/share/const2/v101/dcsurvey.newbes
- /bes/bes/share/const2/v101/vcdcsrvy.bes
- /bes/bes/share/const2/v101/vcsurvey.bes
- /bes/bes/share/const2/v101/besoff.runcons12
- /bes/bes/share/const2/v101/tof12057.offcons
- /bes/bes/share/const2/v101/muz12057.offcons
- /bes/bes/share/const2/v101/dcc12035.offcons
- /bes/bes/share/const2/v101/bsc12057.offcons
- /bes/bes/share/const2/v101/esc12098.offcons
- /bes/bes/share/const2/v101/dex12210.offcons
- /bes/bes/share/const2/v101/vcc11999.offcons
- /bes/bes/share/const2/v101/vcdctest.offcons
- /bes/bes/share/const2/v101/dch12057.offcons
- file:/bes/bes/share/const2/v101/mdcdct.data
- /bes/bes/share/const2/v101/mdcscr.data
- /bes/bes/share/const2/v101/vctkdt.dct
- /bes/bes/share/const2/v101/vcscdt.dct

3 The Description of Checking of the BES V101 and PC LINUX-V101

After reconstruction the data sample in the HP and PC, all of the parameters of subtypes mentioned above have been filled into ntuple and out put a ASKII file same time. The BES software version V101 and the data sample of /data/d54/bescal/flt_keep/run12054.flt is used for this job.

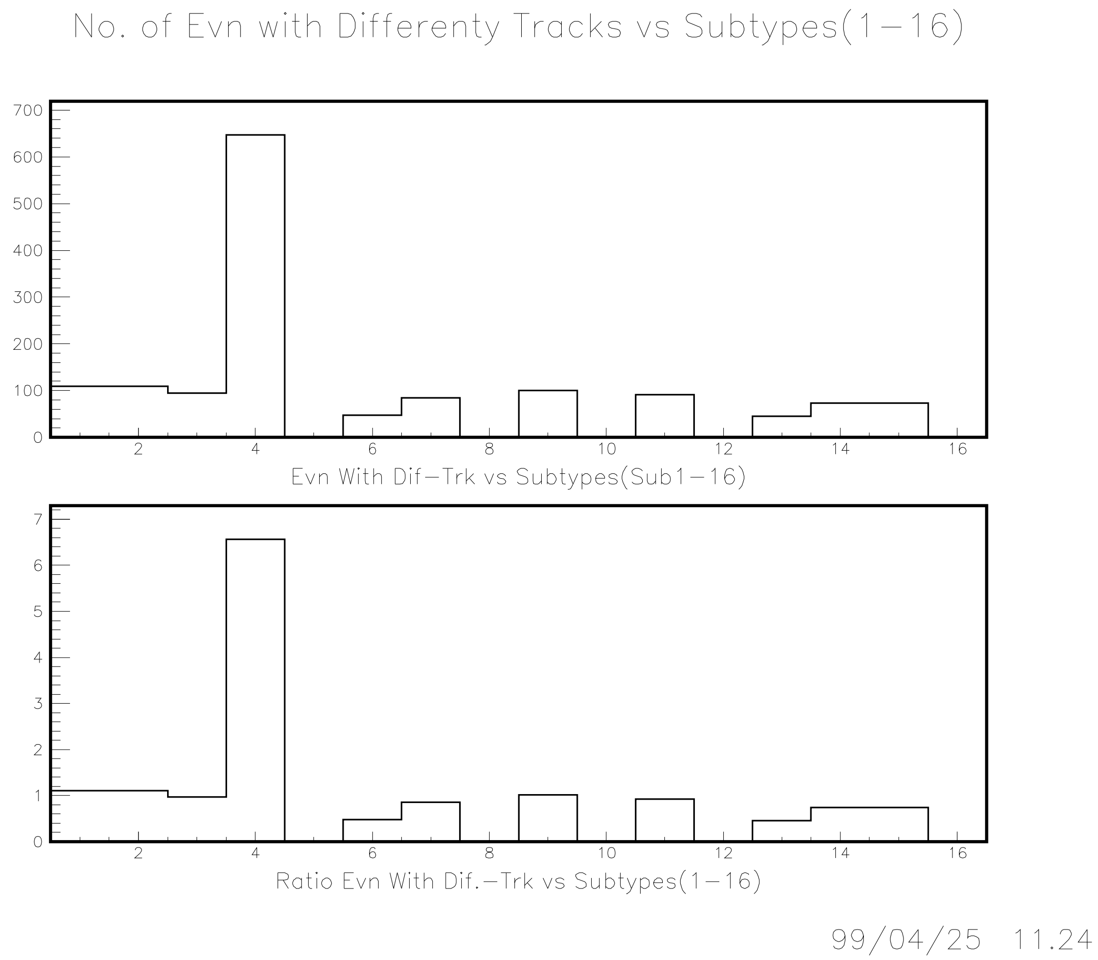
After finished above job, the comparison of each parameters of the subtypes is done using the two kinds of ASCII files(from HP and PC), The δ value between the HP and PC of the parameters is defind as (Ipar_vhp - Ipar_vPC)/Ipar_vhp, and the 0.01 is taken as the different criteria in this note. That is: if the δ of a given parameter of a subtype is great than 0.01, then this parameter of the subtype is considerded as different between HP and PC.

4 The Preliminary Conclusion

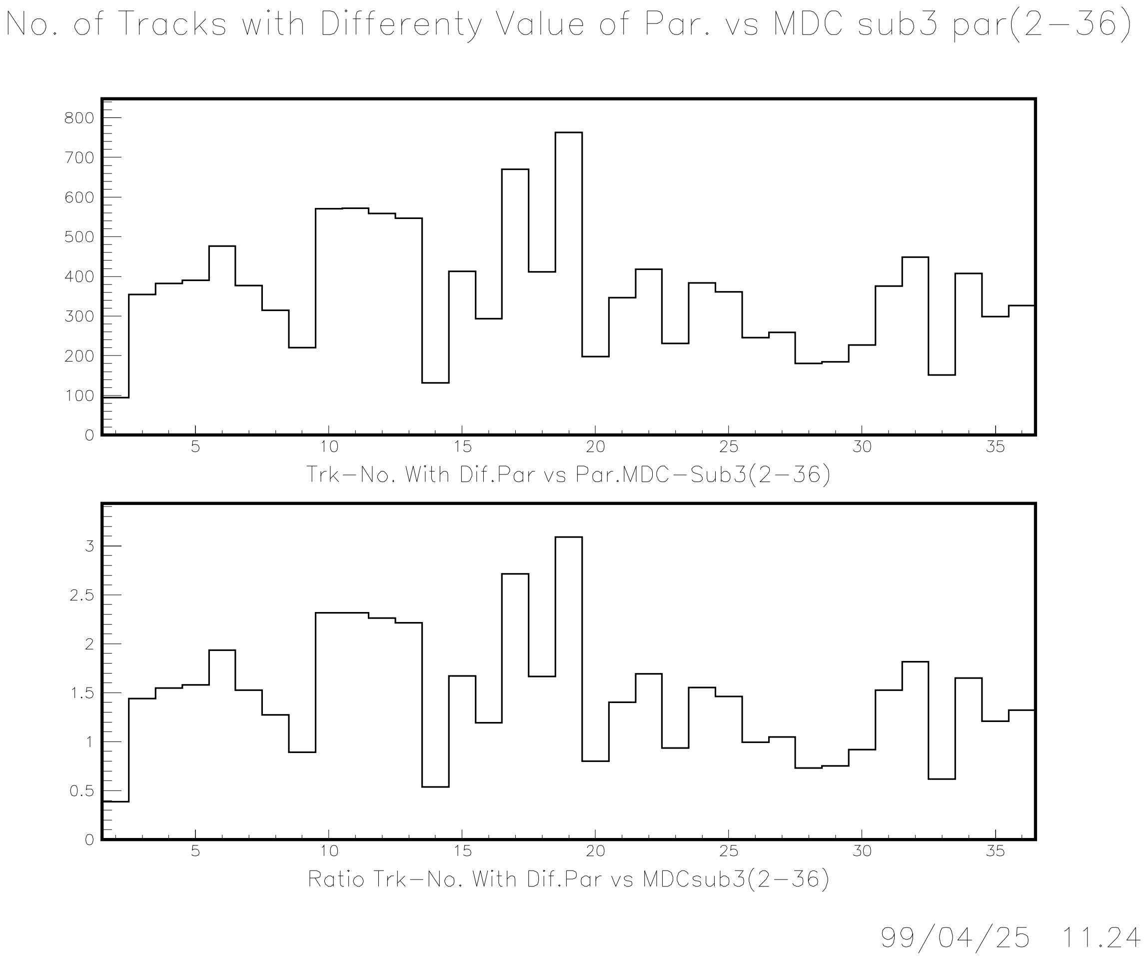
The differences of the results of the reconstruction got from the HP and PC is quite explicitly . There are two kinds of results:

- First one is: if the track number of a subtype is different in event, this subtype be called TRK DIFFENTY.
- The second one is: in a event with same tracks No., if the value of Ith parameter of a subtype is different, this parameter is called the VPAR. DIFFENTY.

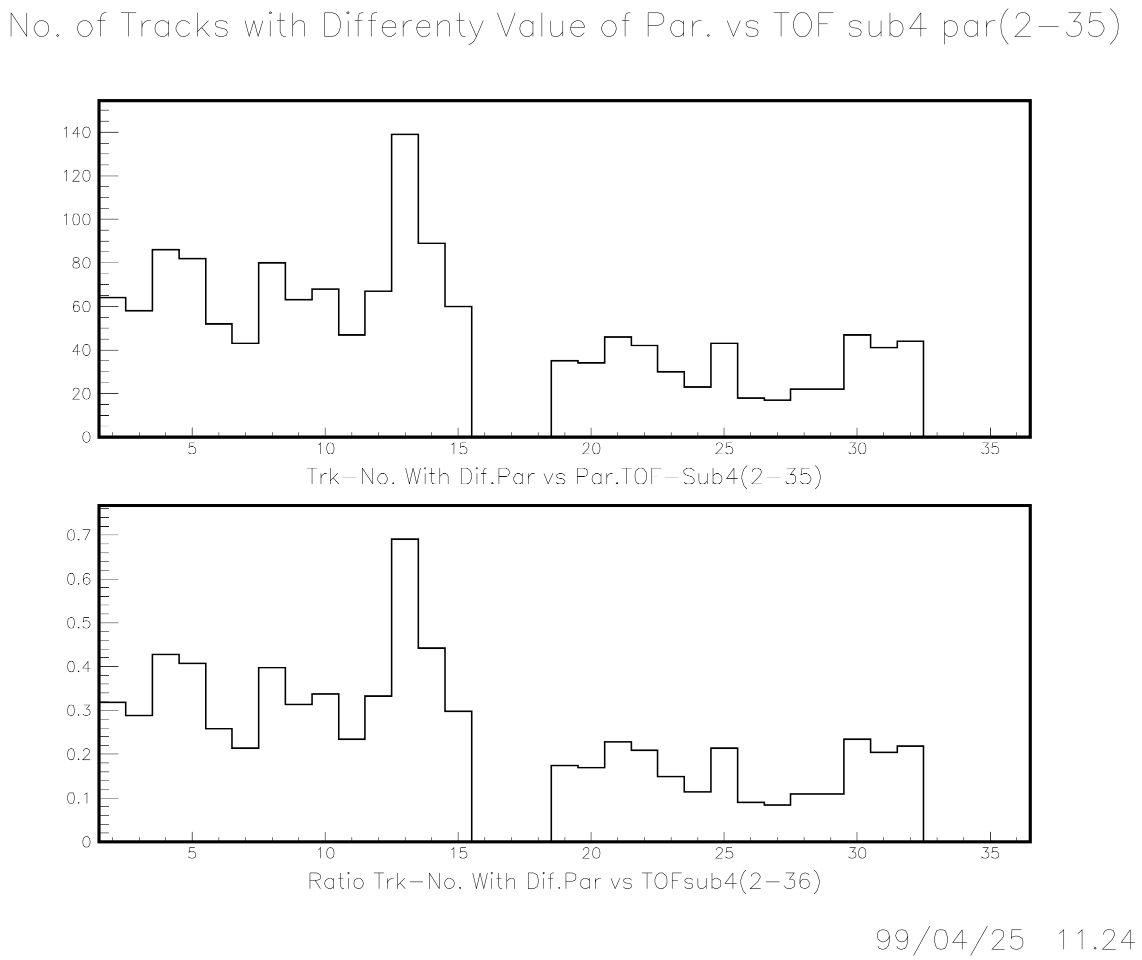
The TRK DIFFENTY is shown in the Fig. 1, the first plot is the absolute events number with different tracks virus the subtypes, the second plot is the per centage ratio of the events with different track number virus subtypes. From this plot, we can see the maximum different 7% is the subtype 4(TOF). The differences of most subtype is around 1%.



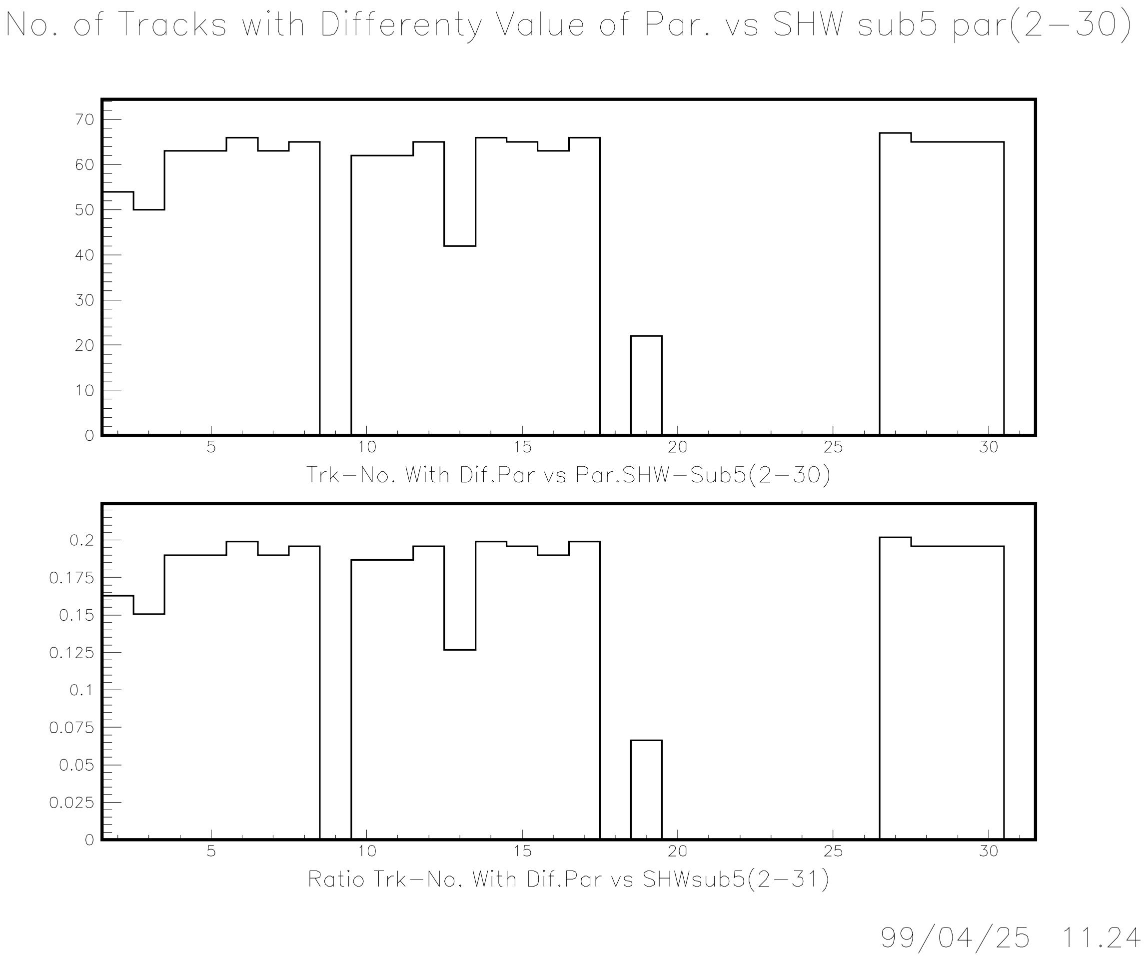
The VPAR. DIFFENTY of subtype 3 is shown in the Fig. 2, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 3. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus each parameter of the subtype 3. From this plot, we can see the maximum differences 3% is the parameter 19(mfit). The difference of most parameter is around 1.5%.



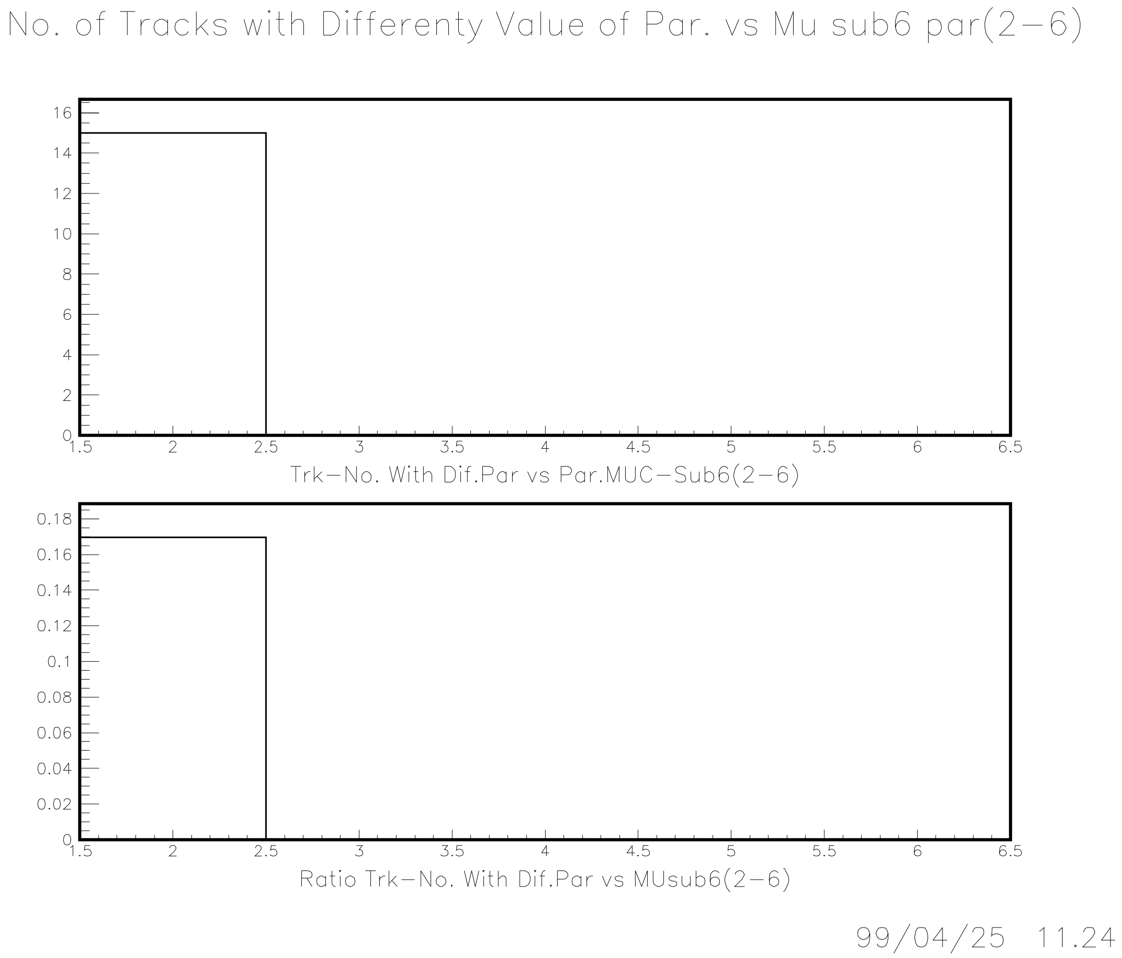
The VPAR. DIFFENTY of subtype 4 is shown in the Fig. 3, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 4. The second plot is the per centage ratio of VPAR. DIFFENTY track numbers value virus each parameter of the subtype 4. From this plot, we can see the maximum difference 0.7% is the parameter 13(mass2). The difference of most parameter is around 0.2%.



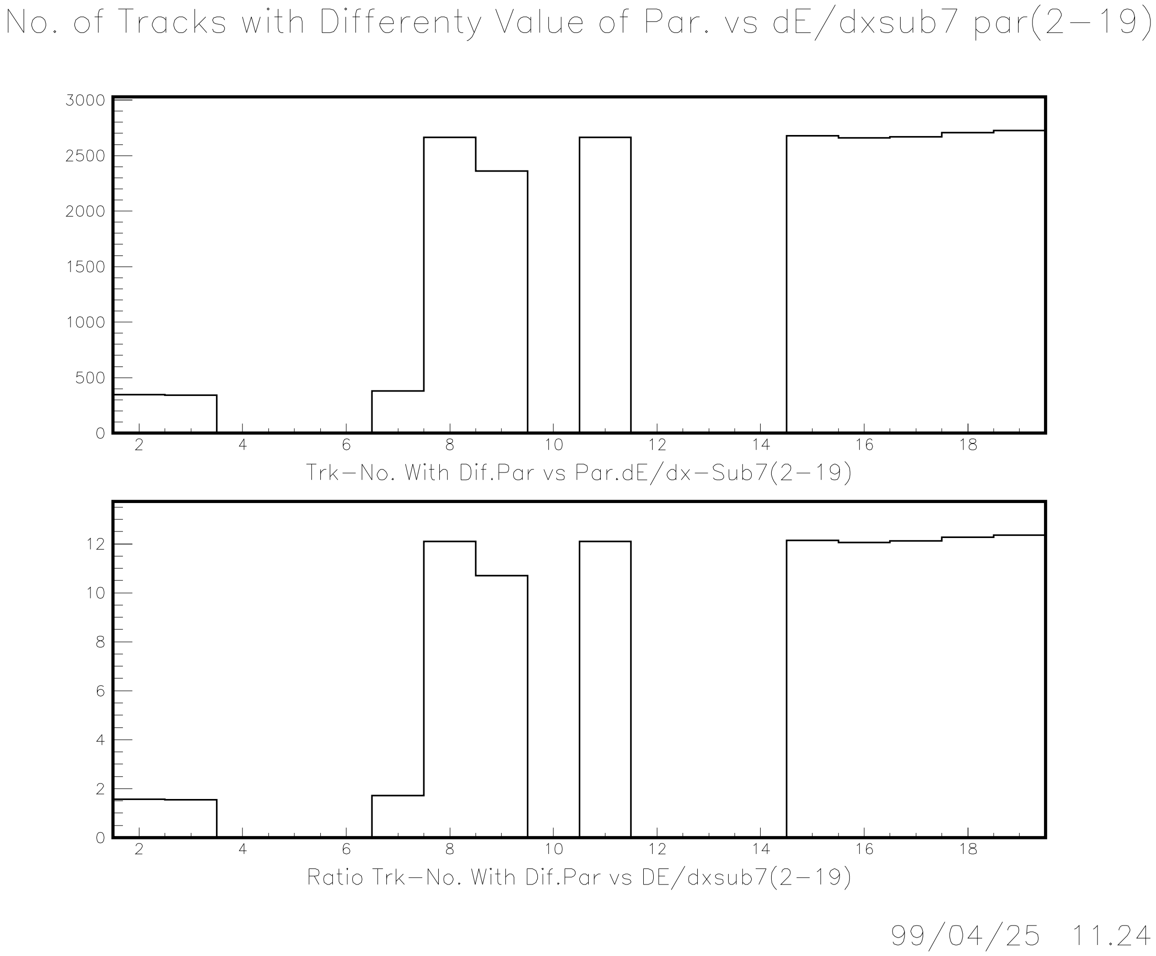
The VPAR. DIFFENTY of subtype 5(SHW) is shown in the Fig. 4, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 5. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus the each parameter of the subtype 5. From this plot, we can see the the difference of most parameter is less than 0.2%.



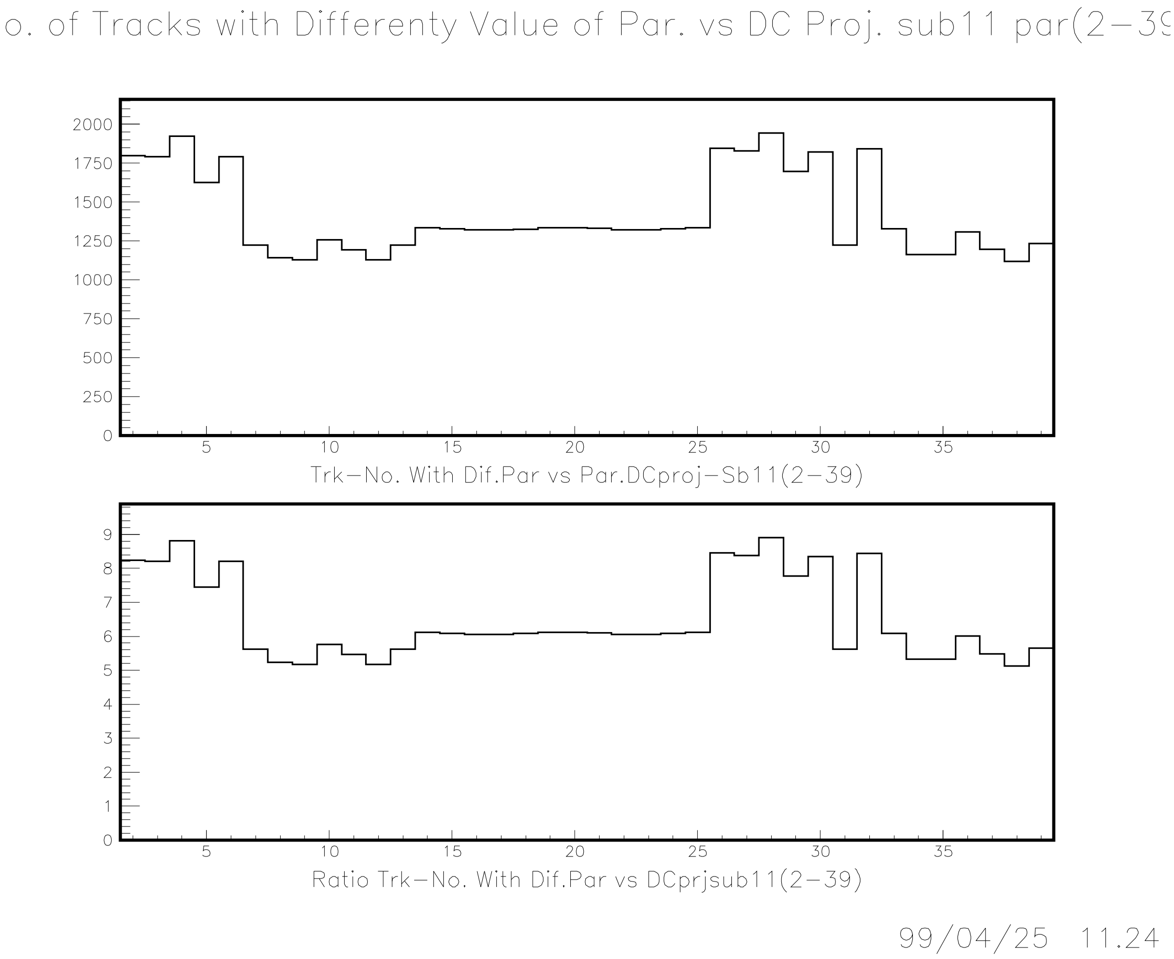
The VPAR. DIFFENTY of subtype 6(MU) is shown in the Fig. 5, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 6. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus virus each parameter of the subtype 6. From this plot, we can see the the difference of the parameter 2 is less than 0.2%.



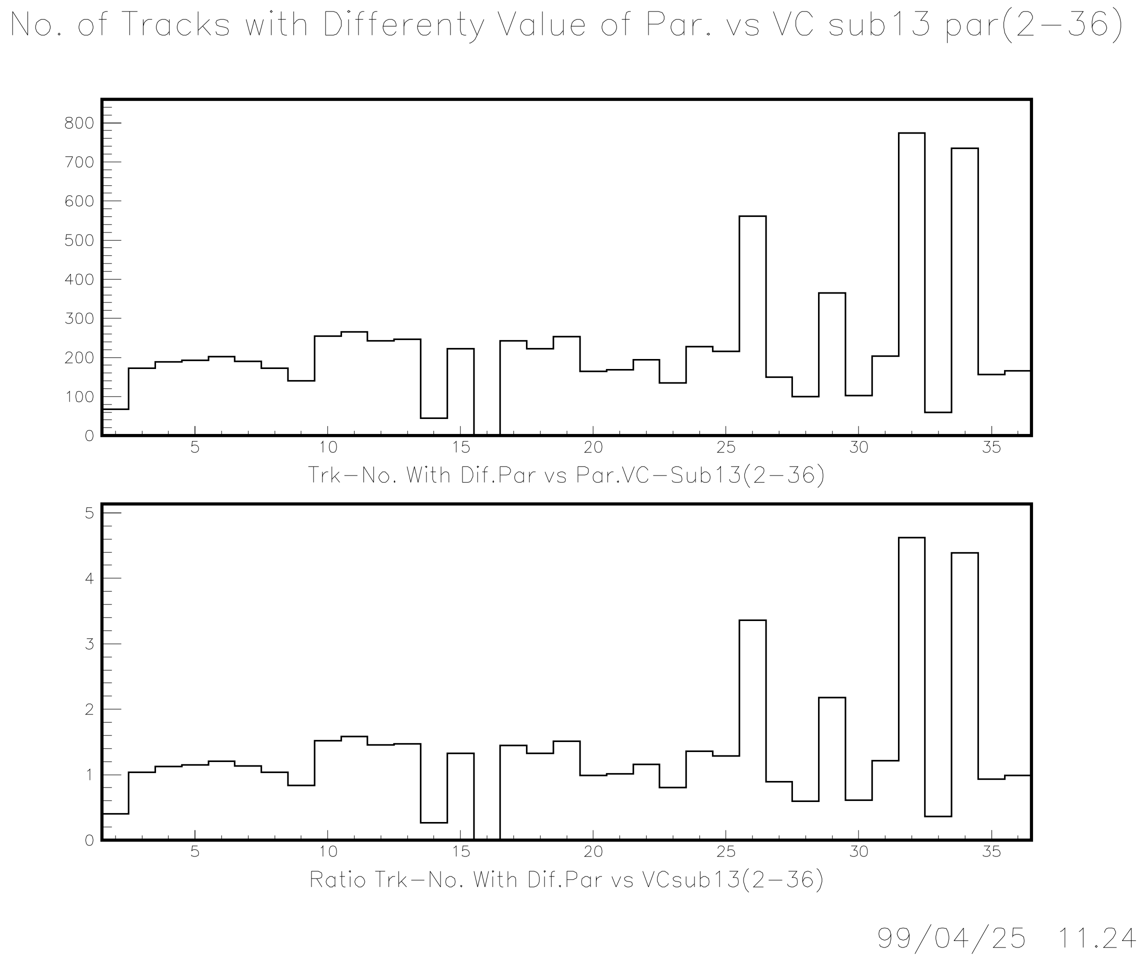
The VPAR. DIFFENTY of subtype 7(dE/dx) is shown in the Fig. 6, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 7. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus the each parameter of the subtype 7. From this plot, we can see the differences of some parameter is around 12%.



The VPar. DIFFENTY of subtype 11 is shown in the Fig. 7, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 11. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus each parameter of the subtype 11. From this plot, we can see the difference of most parameters is from 5% to 8%.



The VPar. DIFFENTY of subtype 13 is shown in the Fig. 8, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 13. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus each parameter of the subtype 13. From this plot, we can see the difference of some parameters is from 1% to 4%.



The VPar. DIFFENTY of subtype 15 is shown in the Fig. 9, the first plot is the absolute VPAR. DIFFENTY track numbers virus each parameter of the subtype 15. The second plot is the per centage ratio of the VPAR. DIFFENTY track numbers virus each parameter of the subtype 15. From this plot, we can see the difference of some parameters is from 20% to 100%.