
weekly meeting

J-PARC E73 2nd, E80

Status report about BLDC and CDC analysis,
Modified plan about my Master Thesis

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現状と今後の方針

- CDC ArCO₂ データ解析のためにE73_2nd データでChamber解析の練習中
 - BLDC
 - TOT cutや1 hit eventなど、様々なカットを試して綺麗な TDCを抽出
 - Drift lengthのoffset(パラメータ)を決めた
 - XT curve(パラメータ)を決めた
 - Residualを見る
 - Tracking efficiencyを求める
 - beam profile、beam inclinationを見る
 - CDC
 - まだ何もやっていない。
 - まずは色々ヒストを見てみる。
- 練習のゴール
 - BLDCとCDCのtrackを組み合わせてreaction pointを決定する

今後

Analyzerでどういうことをやっている
のか理解する

今後

Contents

- Recent events
- To do
- Plan about Master Thesis
- Future events

Recent events

- E73_2nd data taking ~6/5
 - Helium-4 done
 - Hydrogen done
 - Helium-3 done ~40% of our goal
- CDC meeting @Tateyama today
- E80 meeting @RIKEN 6/12, 13
- GPPU_2nd application 7/16~7/19
- JPS meeting manuscript ~7/23

BLDC analysis

- Aim : Be familiar with analyzer via deciding the reaction point
- What I want to do
 - explain a path to make tracks
- What I did
 - nothing ...

CDC analysis

- Aim : Be familiar with CDC analyzer
- What I want to do
 - decide the parameters (Drift length offset, XT curve)
- What I did
 - nothing ...

To Do

- Tracking efficiency
 - Kaon profile at Final Focus point (FF)
 - Briefly say, understand a part of tracking in the analyzer

```
int layer=track->layer();
hist::H1(tmpname+ "_resi
s);
hist::H2(tmpname+ "_EvNu
, resid, evresidbins);
```

```
#if TRACKING
DCAna->MakePairsAll();
{
    for(int ichm=0;ichm<nchm2;ichm++){
        int kChm=kchm[ichm];
        TString tmpname=chmname[kChm];
        int cid = chmid[kChm];
        // LocalTrack* track=DCAna->GetTrack(cid,it);
        // | #if 0
        int sta;
        int nt;
        hist::T;
        hist::T;
        if(KAO)
            hist::T;
        #endif
        if(KAO)
            hist::T;
        hist::H1(tmpname+"_time", track->GetTrackTime(),2000,-200,200);
        hist::H1(tmpname+"_timerms",track->GetTrackTimeRMS(),1000,0,200);
    }
    if(Sing)
        for( i
            int i
            for( i
                in
                hist::T;
                double x,y;
                track->XYLocalPosAtZ(0,x,y);
                hist::H2(tmpname+"_XYLocal",x,y, posbins2);
                hist::H2(tmpname+"_AB",track->gdx(),track->gdy(),100,-0.1,0.1,100,
-UU-----F1
-UU-----F1  UserDC.cc   62% L435  (C++/l Abbrev) -----
```

```
0.1);  
    for(int xy=0;xy<2;xy++){  
        for(int i=0;i<track->nhit(xy);i++){  
            double resid=track->resid(xy,i);  
            int layer=track->layer(xy,i);  
            hist::H1(tmpname+ "_resid"+Form("_layer%d", layer ), resid, residbin\  
s);  
            hist::H2(tmpname+ "_EvNum_dE"+Form("_layer%d", layer ) ,event_number\  
,resid,evresidbins);  
  
ng in the analyzer  
switch(cid){  
    case DetIdBLC1:  
    case DetIdBLC1a:  
    case DetIdBLC1b:  
        track->XYPosatZ(0,x,y);  
        hist::H2(tmpname+ " XY", x,y, posbins2);  
        for(int i2=0;i2<n2;i2++){  
            DCCluster* cl=DCAna->GetCluster(cid,xy,i1,i2);  
            if(cl->nhit()==2){  
                TString clstr=Form("_cluster%dd%dd" ,xy,i1);  
                for(int iadd=0;iadd<(int)tmpadd.size();iadd++){  
                    hist::H1(tmpname+ "_time" +tmpadd.at(iadd)+clstr, cl->ti\ne(), 1000,-100,400);  
                    hist::H1(tmpname+ "_timesub" +tmpadd.at(iadd)+clstr, cl->ti\ne(), 1000,-250,250);  
                    hist::H1(tmpname+ "_ctime" +tmpadd.at(iadd)+clstr, cl->ct\ime(), 1000,-100,400);  
                    hist::H2(tmpname+ "_timesub_time" +tmpadd.at(iadd)+clstr, cl->ti\ne(), cl->time(), 100,-200,200,100,-100,400);  
                    hist::H2(tmpname+ "_timesub_ctime"+tmpadd.at(iadd)+clstr, cl->ti\ne(), cl->ctime(), 100,-200,200,100,-100,400);  
                }  
            }  
        }  
    }  
}  
#endif  
1,\n    for(int itr=0;itr<ntra;itr++){  
---UU-----F1 UserDC.cc 59% L416 (C++/l Abbrev)
```

Plan about Master Thesis

- Jul. 2~
 - CDC will arrive at J-PARC (準備棟).
- Jul. 22~
 - Make daisy chains, attach it the CDC
- Aug. Sep. Oct.
 - Attach Circuit board
 - HV
 - fell down to the ground
 - aging (goal : $I = \sim 1 \text{ um}$)
 - connect ASD to a part of the boards
 - Noise reduction
 - Gas leak check
 - analog signal check with checking source
 - Data taking by cosmic ray with a part of layers
- Dec.
 - After the E73, data taking by cosmic ray using the repeaters and cables of current CDC

list up 足りないもの

- ArCO2 analysis by current CDC using cosmic data
- Simulation by Garfield++
 - Gas Gain...
 -
- write my master thesis

Future events

- Tateyama 6/10~11
- RIKEN 6/12~(13)
- Sendai 6/13~7/20
- Tokai 7/21~8/3 ← GPPU exam between this period
- Sendai 8/4~8/7
- Tokai 8/18~9/13
- Sendai 9/14
- JPS in Hokkaido 9/15~20 ? Talk about CDC with ArCO₂ (by cosmic data)
- Tokai 9/21~
- J-PARC E73_2nd (3rd) Nov.~

Questions

- Why is there a valley besides the main peak of TDC (p. 5) (H. O)
 - While output the signal from discri, the input signal is ignored.
- How are peaks explained except for the main peak? (p. 5) (H. O)
 -
- Why are Shapers (A"S"D) needed for CDC? (p. 13) (M. M)
 -

Back Up

Beam Line (J-PARC K1.8BR)

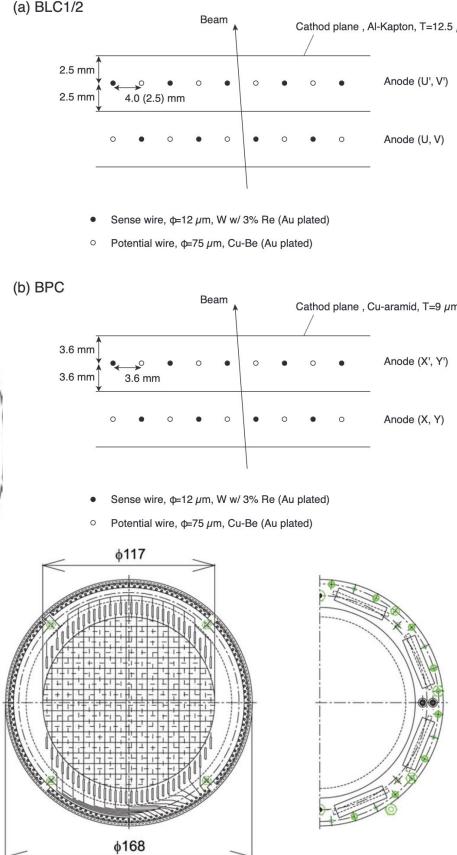
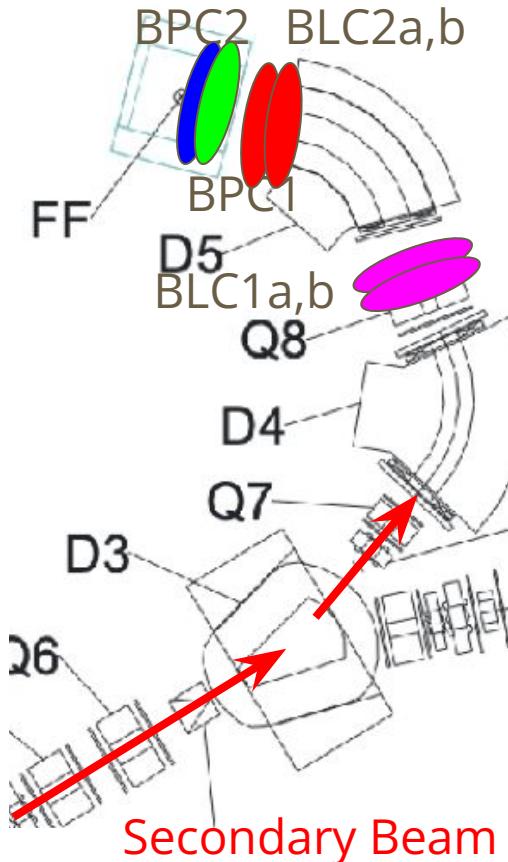


Fig. 2.6 Design of the BPC (all dimensions in mm). Taken from Ref.[60].

- The role of BLDC
 - Beam tune
 - To decide the reaction vertex
 - work together with CDC track
- Present HV (cat=pot) and V_{th}
 - BLC1 : 1250 V, 4.00 V
 - BLC2 : 1275 V, 3.30 V
 - BPC1 : 1450 V, 0.75 V
 - BPC2 : 1425 V, 1.05 V
- Gas
 - Ar : isoC₄H₁₀ = 4 : 1, + methylal
 - Ar 80 ml/min
- Resolution
 - about 0.1 mm