

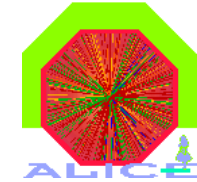
Raw data session:

SPD raw data: status and plans

Domenico Elia (INFN Bari)

*ALICE Offline Week
CERN / October 1-6, 2006*





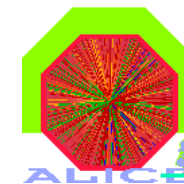
DDL/Equipment ID mapping

```
root [0] AliDAQ::PrintConfig()
=====
|                ALICE Data Acquisition Configuration                |
=====
| Detector ID | Detector Name | DDL Offset | # of DDLs | # of LDCs |
=====
|           0 |      ITSSPD   |          0 |      20   |      4.0   |
|           1 |      ITSSDD   |        256 |      24   |      4.0   |
|           2 |      ITSSSD   |        512 |      16   |      4.0   |
=====
```

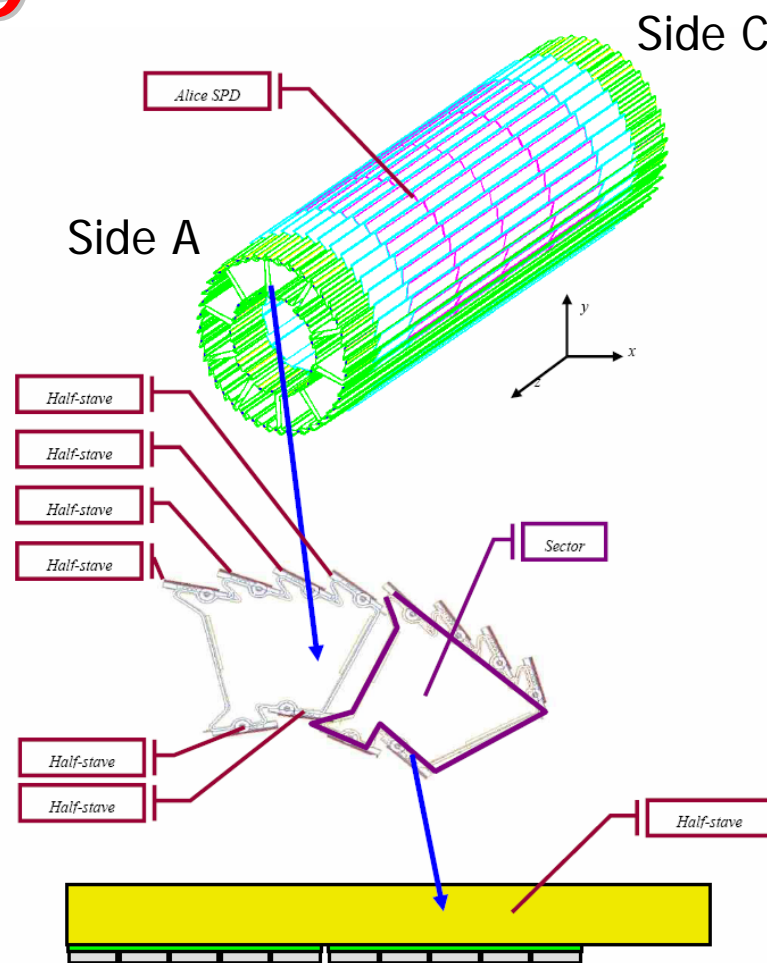
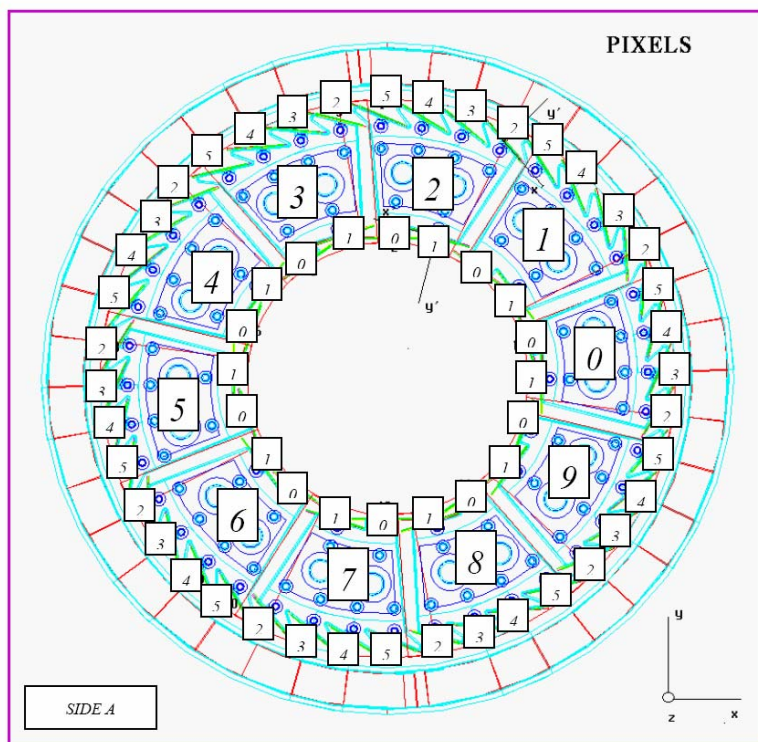
SPD → *EquipID = DDL index [0, 19]*

EquipID : present in the raw data equipment header to identify the SPD half-sector to which data belongs

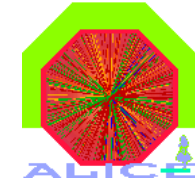




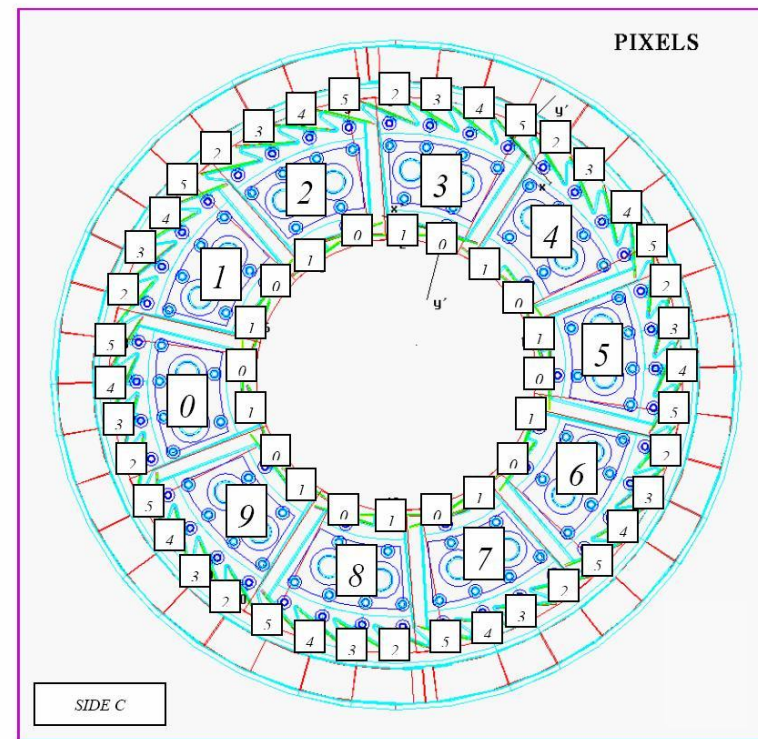
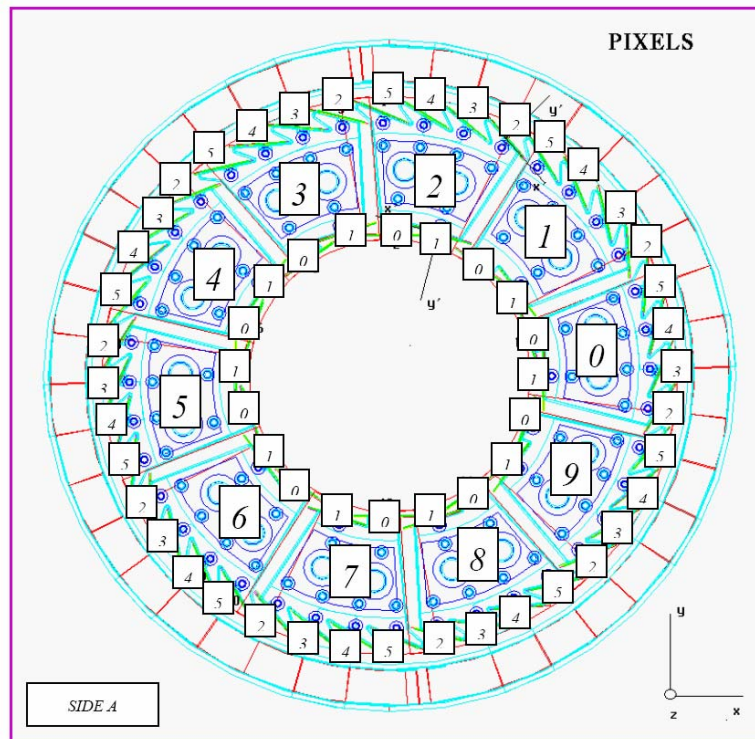
Geometrical mapping



P. Chochula, *Naming and Numbering convention for the ALICE SPD, 2003*

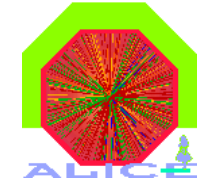


Geometrical mapping (inside each DDL)



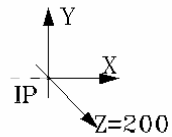
P. Chochula, *Naming and Numbering convention for the ALICE SPD, 2003*



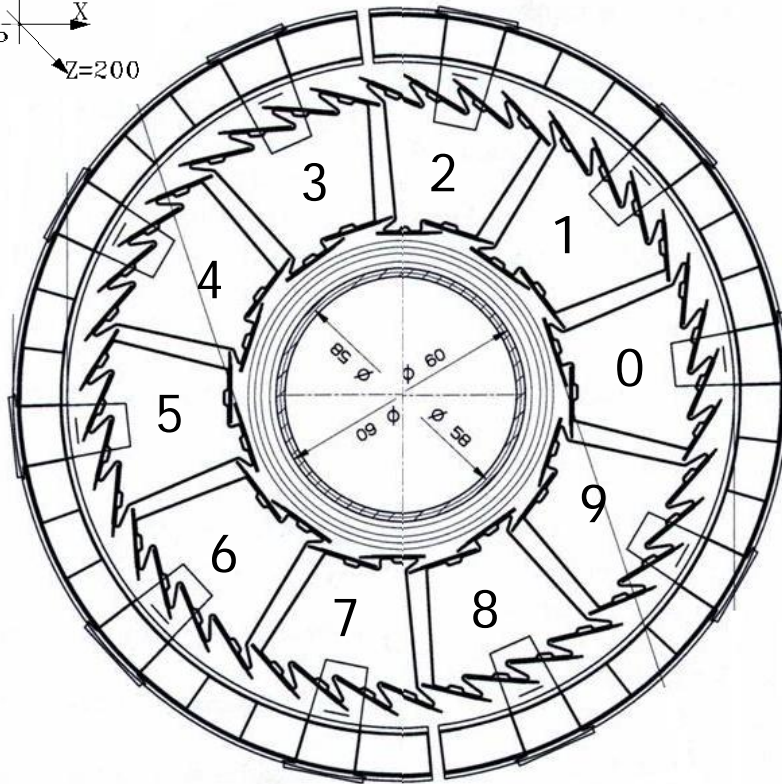


Geometrical DDL mapping

View from RB24

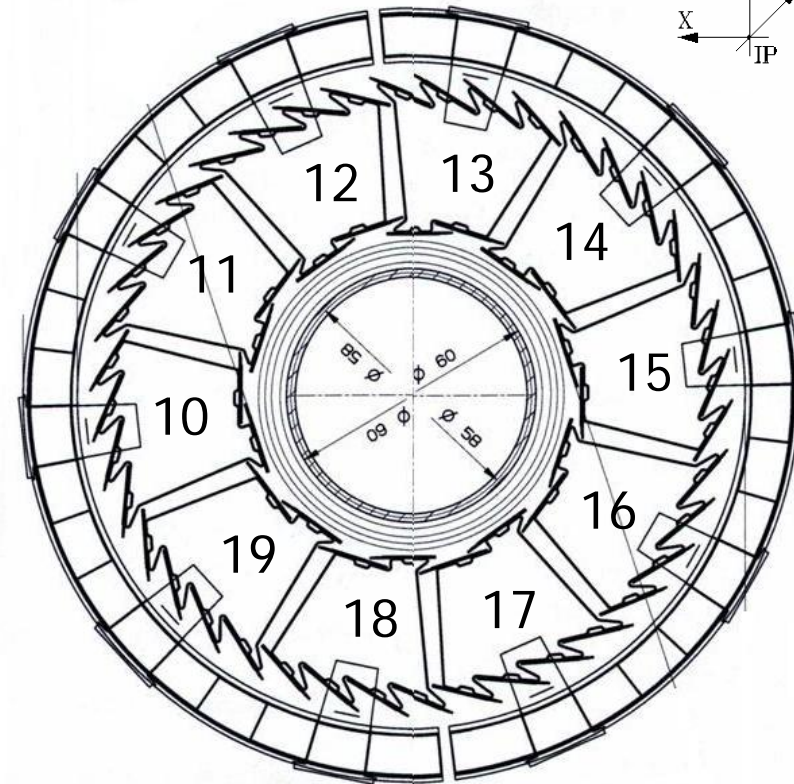
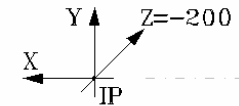


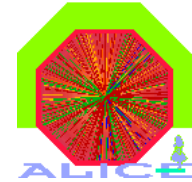
Side A



Side C

View from RB26





Raw data reconstruction

in coll. with H. Tydesjo (CERN)

□ Raw data digitizing:

- data from SPD sector test (with Sr source) in DSF
- basic classes created for ITS beam test '04 (see Betta's talk):

AliITSBeamTestDigitizer

→ from Raw to Digits

AliITSBeamTestDig

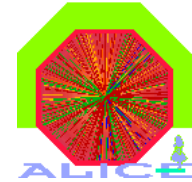
AliITSBeamTestDigSPD

- basic classes for raw data reading:

AliITSRawStream

AliITSRawStreamSPD





Raw data reconstruction

□ Raw data digitizing:

➤ example macro:

```
Int_t DigitizeRawData(TString rawfile = "run804.001",
                    TString digitfile = "ITS.Digits.root", Int_t nevents = 2){

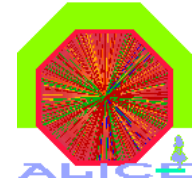
    AliITSBeamTestDigitizer* dig = new AliITSBeamTestDigitizer("dig", "dig");

    dig->SetOptDate (kTRUE);

    //dig->SetActive("SPD", kFALSE);
    dig->SetActive("SDD", kFALSE);
    dig->SetActive("SSD", kFALSE);

    dig->SetDigitsFileName (digitfile);
    dig->SetRawdataFileName (rawfile);
    dig->SetNumberOfEventsPerFile (40000);
    dig->SetStopEventNumber (nevents);
    dig->SetFlagHeader (kTRUE);
    //dig->SetFlagHeaderSPD (kTRUE);
    dig->SelectEvents (7);
    // dig->SetType (7);
    dig->ExecDigitization();

}
```



Raw data reconstruction

□ Raw data digitizing:

- changes needed to account for present data format:

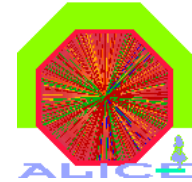
AliITSBeamTestDigSPD:

```
AliITSRawStreamSPD str(fReader);  
  
// fReader->SelectEquipment(17, 0, 19);  
str.SkipCalibHeader();  
while(str.Next()){  
    const AliRawDataHeader* rdh = fReader->GetDataHeader();
```

The equipments no longer have to be selected: done automatically

We now need to correct for an extra calibration header, which might be present in the data (see next slide)





Raw data reconstruction

- Raw data digitizing:
 - changes needed to account for present data format:

AliITSRawStreamSPD:

We read past the calibration header if present:

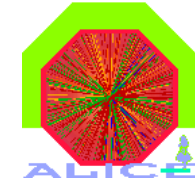
```
void AliITSRawStreamSPD::SkipCalibHeader()  
{
```

Using the **AliRawReader::ReadNextShort** method might be causing problems swapping data words for some platforms:

→ the parsing algorithm will be updated

```
}
```





Raw data reconstruction

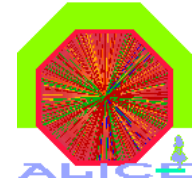
- Raw data digitizing:
 - changes needed to account for present data format:

AliITSRawStreamSPD:

Geometrical mapping between DDL number and module number:

```
const Int_t AliITSRawStreamSPD::fgkDDLModuleMap[kDDLsNumber][kModulesPerDDL] = {
  { 0, 1, 4, 5, 80, 81, 84, 85, 88, 89, 92, 93},
  { 2, 3, 6, 7, 82, 83, 86, 87, 90, 91, 94, 95},
  { 8, 9, 12, 13, 96, 97, 100, 101, 104, 105, 108, 109},
  {10, 11, 14, 15, 98, 99, 102, 103, 106, 107, 110, 111},
  {16, 17, 20, 21, 112, 113, 116, 117, 120, 121, 124, 125},
  {18, 19, 22, 23, 114, 115, 118, 119, 122, 123, 126, 127},
  {24, 25, 28, 29, 128, 129, 132, 133, 136, 137, 140, 141},
  {26, 27, 30, 31, 130, 131, 134, 135, 138, 139, 142, 143},
  {32, 33, 36, 37, 144, 145, 148, 149, 152, 153, 156, 157},
  {34, 35, 38, 39, 146, 147, 150, 151, 154, 155, 158, 159},
  {40, 41, 44, 45, 160, 161, 164, 165, 168, 169, 172, 173},
  {42, 43, 46, 47, 162, 163, 166, 167, 170, 171, 174, 175},
  {48, 49, 52, 53, 176, 177, 180, 181, 184, 185, 188, 189},
  {50, 51, 54, 55, 178, 179, 182, 183, 186, 187, 190, 191},
  {56, 57, 60, 61, 192, 193, 196, 197, 200, 201, 204, 205},
  {58, 59, 62, 63, 194, 195, 198, 199, 202, 203, 206, 207},
  {64, 65, 68, 69, 208, 209, 212, 213, 216, 217, 220, 221},
  {66, 67, 70, 71, 210, 211, 214, 215, 218, 219, 222, 223},
  {72, 73, 76, 77, 224, 225, 228, 229, 232, 233, 236, 237},
  {74, 75, 78, 79, 226, 227, 230, 231, 234, 235, 238, 239}
};
```

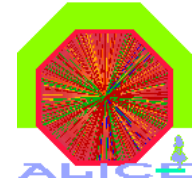




Raw data reconstruction

□ Scheduling:

- fix needed changes for digitizing → end Oct
- implementation in the AliRoot reconstruction
- removing of the dependencies on gAlice → end of year
- try some raw data visualization within Alieve



Commissioning schedule

- SPD sector test in DSF:
 - calibration data
 - cosmic ray data (1 sector) → Oct/Nov, Apr/May '07 (?)

- Half-barrel assembly → Nov on

- Installation → 16 Feb - 28 Mar '07

- Cabling → 30 May - 30 Jun '07

- Cosmic ray data (SPD) → Jul '07 till first beam

- Beam → Aug '07 on

