T0 Calibration
Status Report

ALICE offline week

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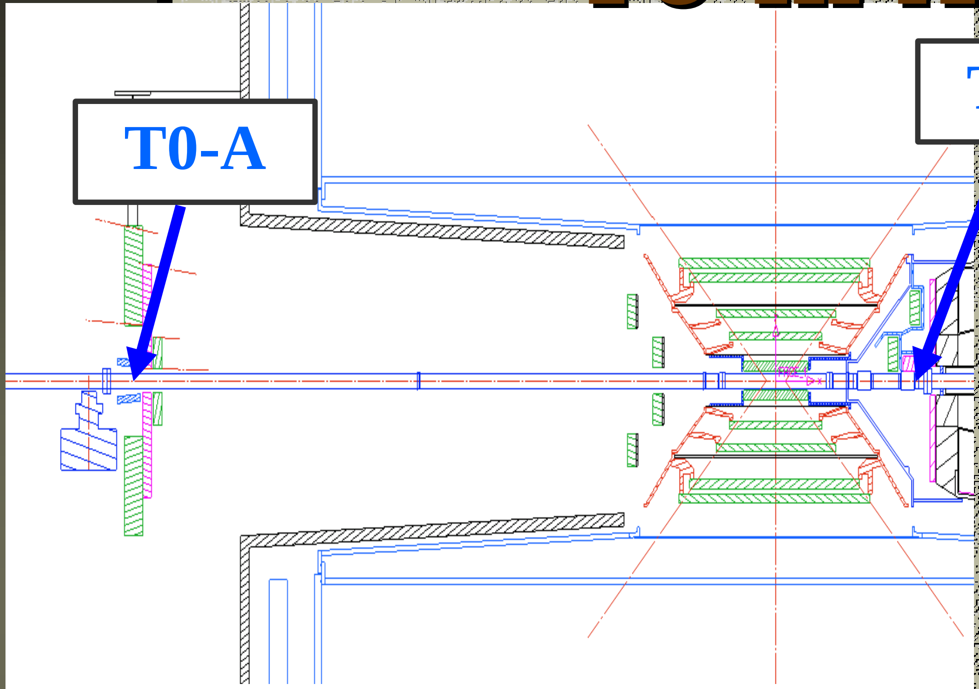
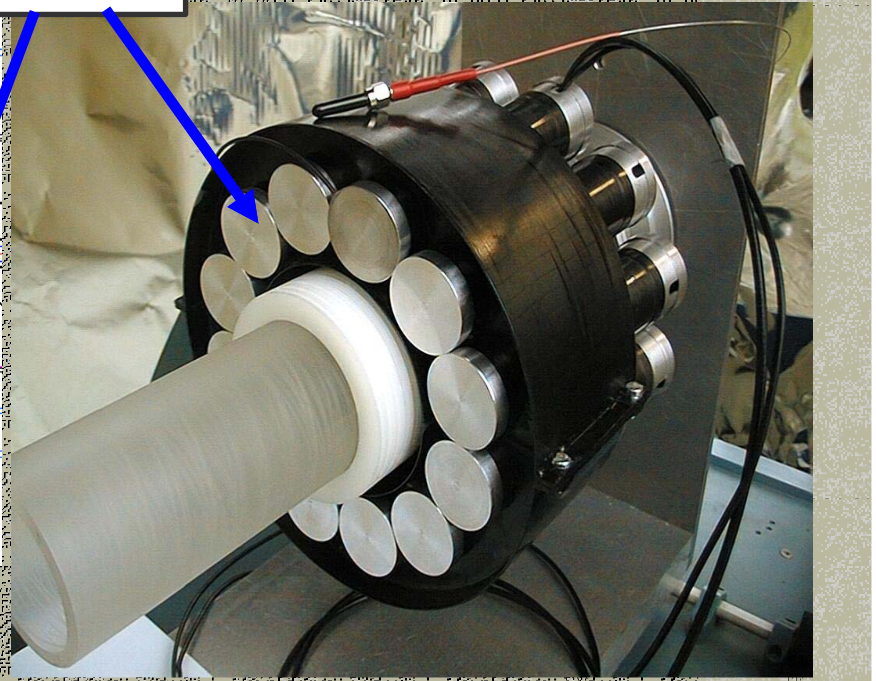
T0 in ALICE





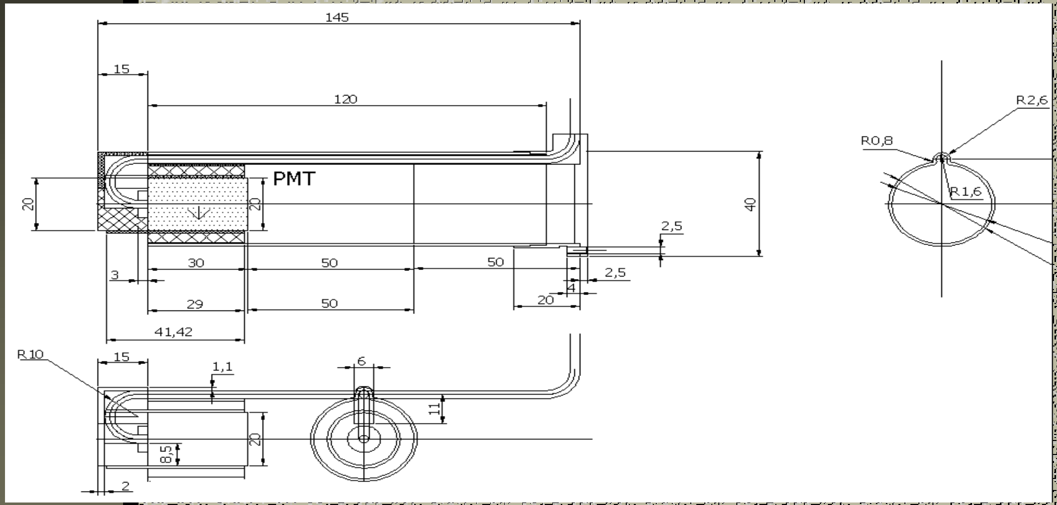
Online :

- **Trigger signals:**
  - **T0-mean**
  - **T0-vertex**
  - **T0-C**
  - **T0-A**
  - **T0-centrality**
- **TRD ‘wake-up’ trigger**

Offline:

- **Vertex**
- **Interaction time**

T0 Calibration with LCS



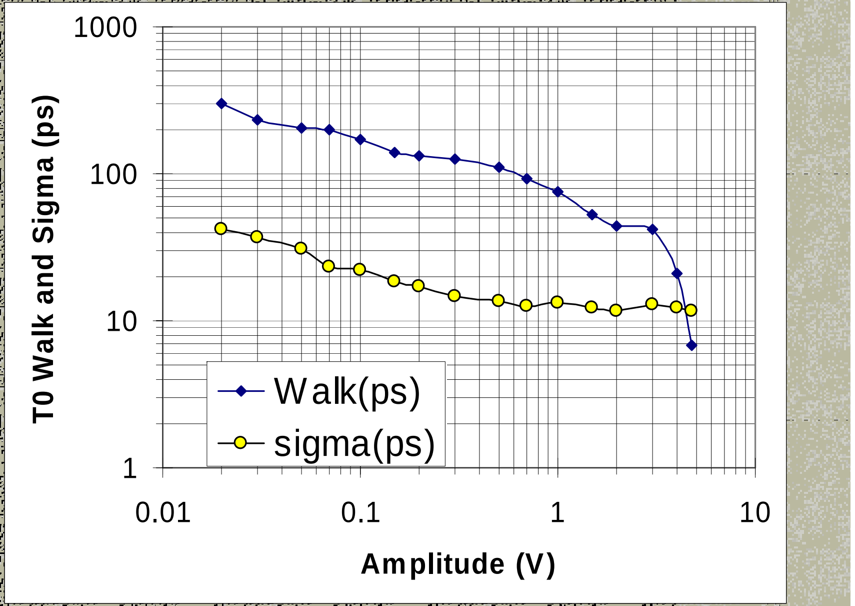
Laser calibration system

- laser pulses send to PMT
- data acquired as during normal event
- Ongoing tests of PMT
- During long gap between BC – one or more laser pulses send to all PMTs

Calibration objects for DB used in reconstruction

For each channel

- time delay
- time vs amplitude calibration curve for accurate time definition



Time-amplitude dependence.

Full list of objects is not clear at present

Using calibration data in reconstruction procedure

- For each channel correct time signal using time-amplitude curve;
- take into account time delay in cables and FE electronics;
- choose channels with smallest time on each side;
- calculate T0 and Zvertex using time information from chosen channels;
- write T0 and Zvertex in AliESD

AliSTARTCalibData.h

```
  class AliSTARTCalibData: public TNamed {
public:
  AliSTARTCalibData();
  AliSTARTCalibData(const char* name);
  AliSTARTCalibData(const AliSTARTCalibData &calibda);
  AliSTARTCalibData& operator= (const AliSTARTCalibData &calibda);
  virtual ~AliSTARTCalibData();
  void Reset();
  virtual void  Print() const;
Float_t  GetTimeDelay(Int_t channel) const {return fTimeDelay[channel];}
 Float_t* GetTimeDelay()   const {return (float*)fTimeDelay;}
 void    SetTimeDelay(Float_t val, Int_t channel) {fTimeDelay[channel]=val;}
  void      SetTimeDelay(Float_t* TimeDelay);
  TH1F*    GetHistTimeDelay() const {return fHistTimeDelay;}
  void     CleanHistos();
  // amplitude - time corrections
  TH1F* GetCurve (Int_t channel) {return fCorrCurve[channel];}
void SetCurve (Int_t channel, TF1 *corrCurve) {fCorrCurve[channel]=corrCurve; }
protected:
Float_t  fTimeDelay[24];          // Time delay for each channel
 TH1F*    fHistTimeDelay;       // ime delay histogram
  TH1F* fCorrCurve[24];             // correction curve time-amplitude
  ClassDef(AliSTARTCalibData,1)    // START Sensor Calibration data
};
#endif
```

CBD objects used for control only

- *Optical properties of Cherenkov radiator*
- *PMT efficiency*
- *Equalising of amplitudes of each PMT*
- *Gain vs. HV curves*

For centrality trigger

- *Measurements of characteristics of all 24 CFDs in full dynamic range*
- *Measurements of the output signals of linear adders*
- *Adjustment of multiplicity thresholds*

Summary

- ➢First implementation of calibration classes
- ➢Current DB interface works smoothly

Do be done:

- ➢Include calibration procedure in reconstruction code
- ➢Real data will be included after measurements
- ➢All decalibration – recalibration business will be done in November