Status of TOF Calibration Database

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Measurement

TOF= {TVC[0]*Ct[0]+TVC[1]*Ct[1]−(s[0] + s[1])}/2

− T0[BBC] − T0 − T0[global] − T0[TVC]

Y = *v*/2*(TVC[0]*Ct[0]− TVC[1]*Ct[1]) + Y0

QVC[i] = QVC3[i] − QVC1[i]

ELOSS = Cq*sqrt(QVC[0]*QVC[1])

i = 0 : lower / 1 : upper

dTofRaw

TVC[i]
QVC[i]

How to get Calibration Parameters

pass0: TVC time calibration (*by Bench test*) −−> Ct[i] constant

pass1: QVC gain calibration <−− QVC[i]

Min.Ion Particle ~ 3MeV (scint. 1.5 cm) −−> Cq slat by slat

pass2: Slewing correction with BBC

<−− TVC[i], T0[BBC] from BBC

TOF = (TVC[0]*Ct[0] + TVC[1]*Ct[1])/2 − T0[BBC]

s[i] = a[i] + b[i]/sqrt(QVC[i])

TOF = TOF − (s[0] + s[1])/2 −−> s[i] slat by slat

pass3: Time offset calibration with CGL

<−− TVC[i], Flight path length from CGL

TOFπ = L/*c*βπ

T0 = TOF − TOFπ

T0[global] = TOF − TOFπ −T0

T0[TVC] = TOF − TOFπ − T0 − T0[global]

−−> T0, T0[TVC] slat by slat

−−> T0[global] run by run

pass4: Ypos calibration with CGL

<−− TVC[i], position by CGL

Y0 = *v*/2*(TVC[0]*Ct[0]− TVC[1]*Ct[1]) − Y[CGL]

−−> Y0 slat by slat

dTofCal

dTofReconstructed

TOF
XTOF
ELOSS

Calibration parameter in DB

		No. of Parameters	Calibration period
T0	Time offset of each slat	No. of slats	every 50 runs
T0[gloval]	Time offset of a run	1	every run
T0[TVC]	Time offset of each TVC	(No. of slats)*5	every 50 runs
Y0	Y−position offset	No. of slats	every 50 runs
Cq	QVC gain conversion [eV/ch]	No. of slats	constant
Ct[i]	TVC time conversion [ps/ch]	No. of PMTs	constant
s[i]	Slewing correction function	2 (up, down)	every 50 runs
v	light velocity in the scintillator	No. of slats	every 50 runs

Plan

– The priority of TOF installation at PEH:
until Sep. 15

– Make calibration module:
end of October

– Add database class using pdbcal:
end of November