t0 – Calibration with YAG Laser Nov/Dec 2004

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- **Why t0 – Calibration**
- **Calibration Steps**
- **Results**
- **Channel Debugging**
- **TWR Activities**
- **Problems**

Why t0 – Calibration ?

Because of
Pole Activities Nov./Dec. 2004:

- **Replacement of SWAMP's (see talk Per-Olof),**
- **HV changes,**
- **Threshold changes,**
- **Channel debugging**

t0 – Calibration Steps

If detector in final state for data taking:

- **Fit of 1 p.e. peak position for each channel**
- **Laser calibration runs for all required channels**
- **Data analysis, estimate of raw t0 and alpha**
- **Definition of reference channels for normalization**
- **Repeat of calibration for bad channels**
- **Final estimate of t0, alpha**

t0 - Calibration (1)

STRING	SWAMPS	HV	THRESHOLD	t0 – MEAS.
1	Changed	Changed	Changed	Done
2	“	“	Not changed	“
3	“	“	Changed	“
4	“	“	“	“
5	“	“	“	“
6	“	“	“	“
7	“	“	“	“
8	“	“	“	“
9	“	“	“	“
10	“	“	“	“

t0 - Calibration (2)

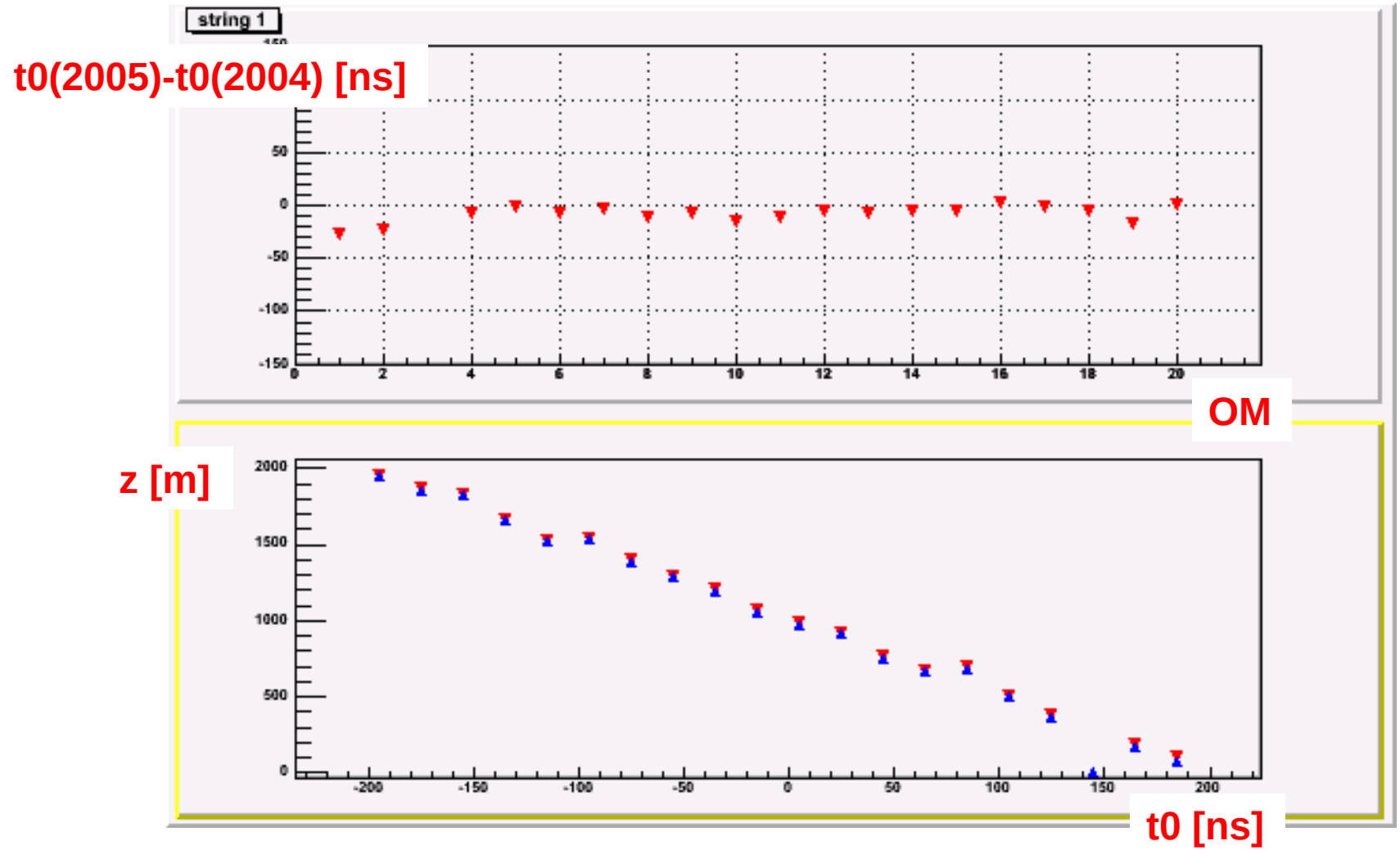
STRING	SWAMPS	HV	THRESHOLD	t0 – MEAS.
11	Not changed	Not changed	Not changed	Partly
12	“	“	“	“
13	“	“	“	“
14	“	Changed	Changed	Done
15	“	“	“	“
16	“	“	“	“
17	“	Not changed	Not changed	Few ch.
18	“	“	“	None
19	“	“	“	Few ch.

t0 – Calibration (3)

Preliminary Results:

➢ alive:	633	channels
➢ dead:	47	“
➢ HV changed:	377	“
➢ threshold changed:	223	“
➢ t0, alpha measured:	445	“

t0 – Calibration (4)



Channel Debugging

Read-out of each channel (lemo and fibre) checked for Muon and TWR DAQs:

- **OM's: 308, 327, 407, 420, 506, 542**
  wrong entries in ORB db
- **OM: 385 wrong entry in ORB and SWAMP db**
- **OM's: 555, 559, 560, 590**
  without ADC connection, prompt output to TWR
- **OM's: 595, 596, 676**
  wrong entry in SWAMP db

All this corrected, also in the Databases, see Steffens mirrored website: **http://amanda.wisc.edu/steffen/hwdb**

TWR Activities

- **Tests for TWR read-out of laser data**
- **Running TWR DAQ together with Muon DAQ**
- **t0 TWR calibration (4 OM's per string)**

Problems

- Laser instabilities
- Laser diode battery
- HV failures
- Quality of optical fibres and connectors

Possible Solutions

- Check laser and laser diode battery
- Limit t0 – calibration with laser to ~4 OM's/string
- Use down-going muons for t0 – calibration (see talk of Carsten Rott)