Charles University

Prague

WinNT DST production,

TestBeam August 2001:

Alignment,

Edge ON/OFF,

Magnet ON/OFF RC study

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WinNT DST production

Recommended software for developers:

- WinNT/Win2000, MSVC++6.0, ROOT3.01

Recommended software for users (for analysis):

- WinNT/Win2000, ROOT3.01
- libraries: librootEvent.dll , dstAlign.dll

WinNT DST production

Useful example of macro for working with libraries: Alan_macro.cpp , using paths and files:

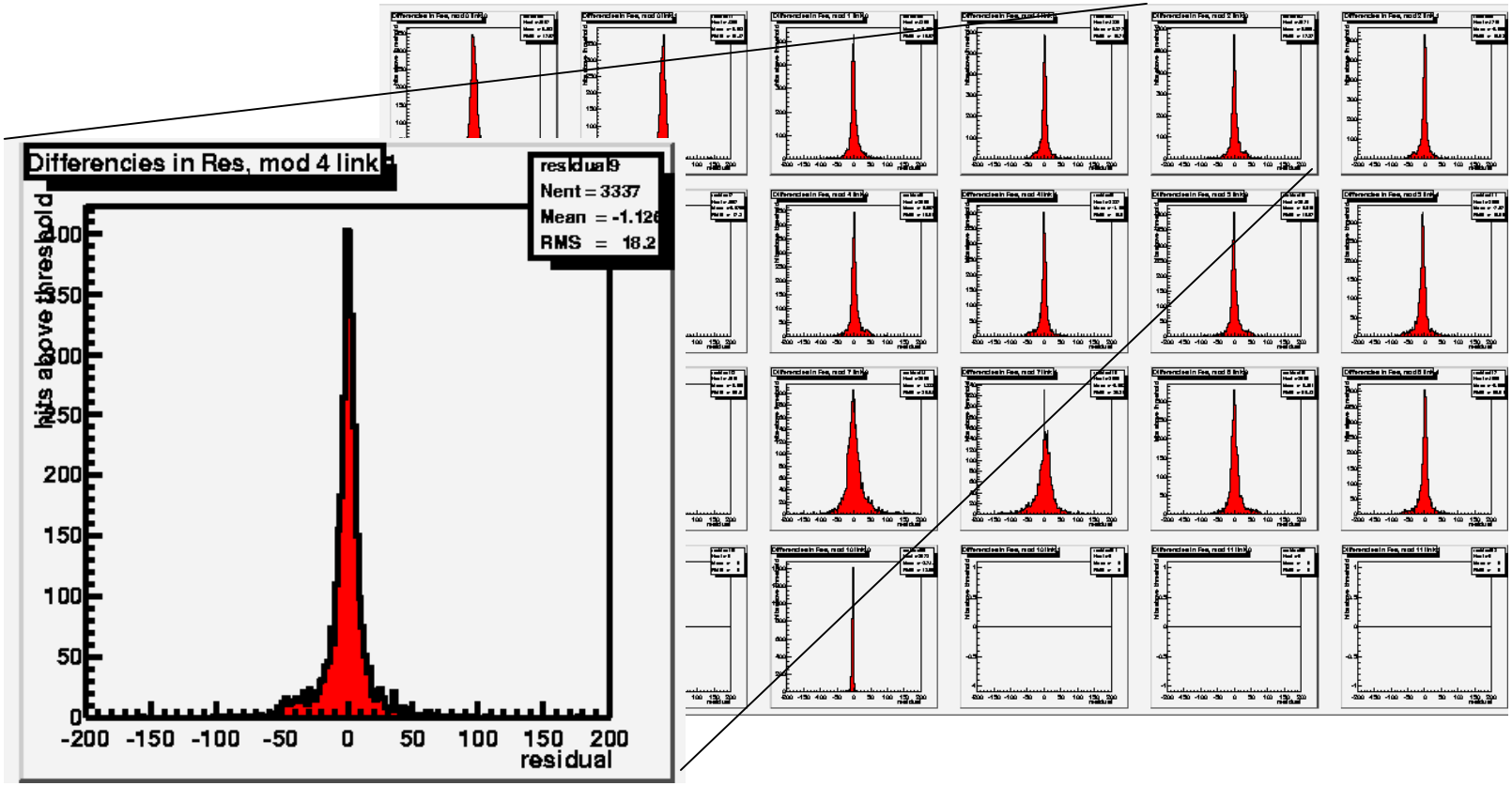
- "c:\\sctdaq_anal\\bin\\ librootEvent.dll "
- "c:\\sctdaq_anal\\bin\\ dstAlign.dll "
- "d:\\sctvar\\dst\\ dst2940.root "
- "d:\\sctvar\\dst\\DSTPK2940.root "
- "d:\\sctvar\\Align_Marcel\\ 2883.align "
- "d:\\sctvar\\config\\ tbDetAlignment2940.cfg "
- "d:\\sctvar\\config\\ tbDetSetting2940.cfg "

•Command line:

.x Alan_macro.cpp(2940,Who)

Who: 1 - Marcel, 2 - Peter

WinNT DST production



Differences between Prague and Valencia residuals

WinNT DST production

Conclusion:

- Second set of DST in the same format in production
- To be finished by end of October (will be announced)
- Two different independent alignments
- DST files will be in CASTOR data storage
- Current information about status of Prague offline & analysis is in:

http://www-ucjf.troja.mff.cuni.cz/~kodys/Work/TBAug2001/TBAug2001.html

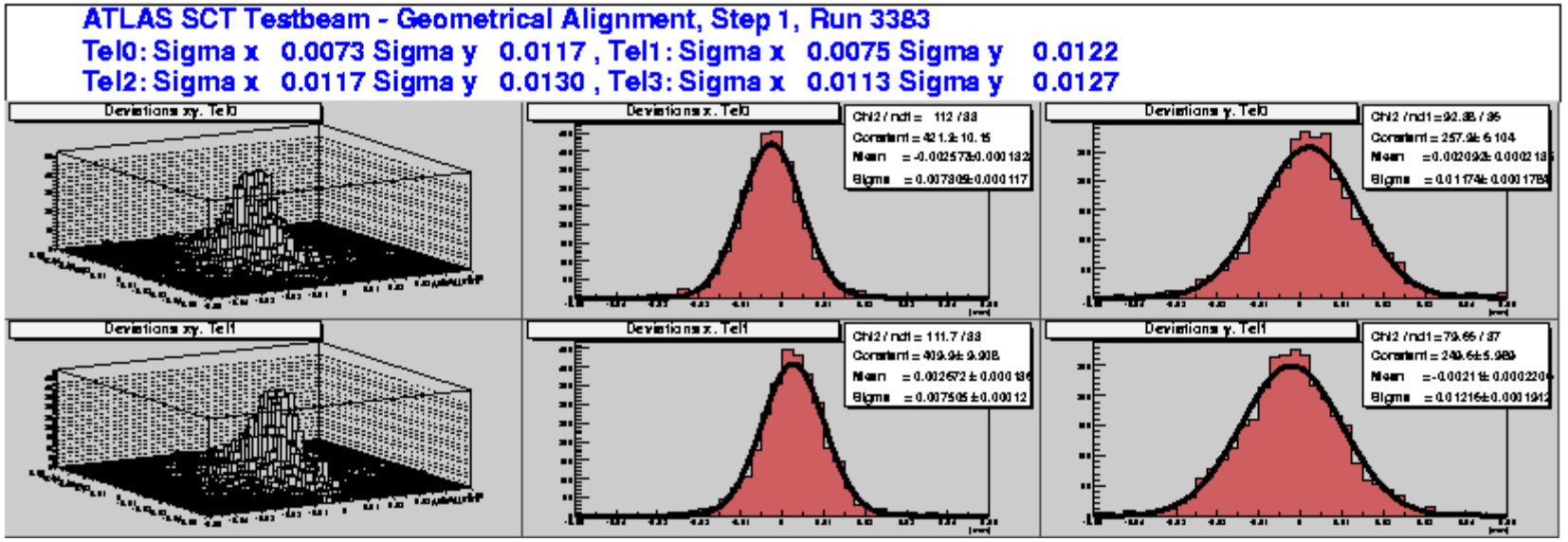
Alignment

TELESCOPE ALIGNMENT

•Calculate parameters a0 and a1 for straight line least squares fit:

$$x = a0_x + a1_x * z \qquad y = a0_y + a1_y * z$$

•Create correction matrix for correction of local telescope inhomogenities, matrix was created for inner telescopes



Alignment

BASIC STEPS OF DETECTOR ALIGNMENT

Alignment Parameters for Prague Analysis:

- Using "good" tracks events for extraction of all detector hits
- Calculate coefficients for detector alignment:

$$\Delta = aT_{1x} + bT_{1y} + cT_{1x}T_{1y} + dM + e$$

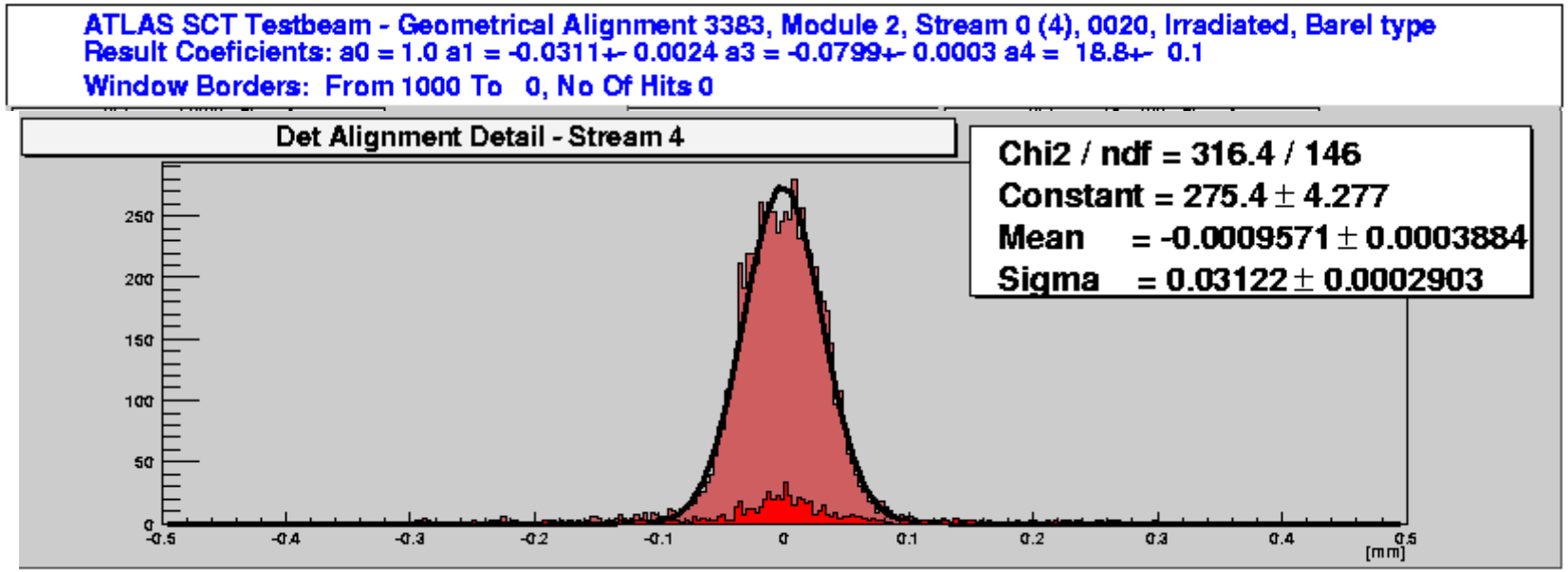
$$|\Delta| \leq 150\ \mu\text{m}$$

Coefficient description:

- a telescope cell size
- b module rotation along z-axis
- c detector fan (forward only)
- d detector pitch
- e module offset
- T telescope channel
- M module channel

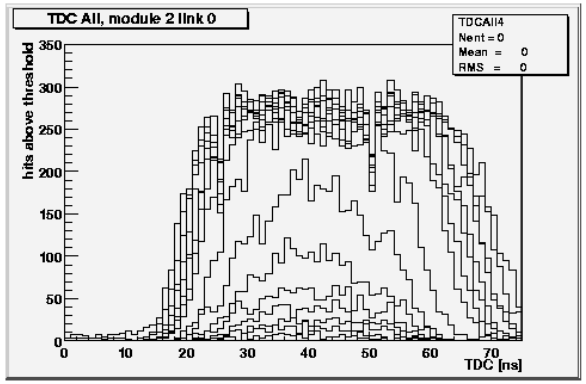
Alignment

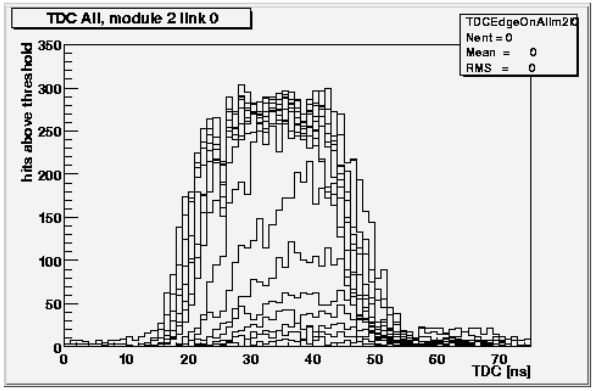
BASIC STEPS OF DETECTOR ALIGNMENT (2)



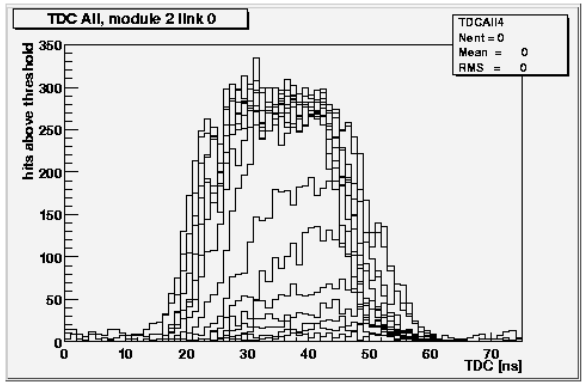
Example of result of alignment, Module 2, Stream 0

Edge ON/OFF



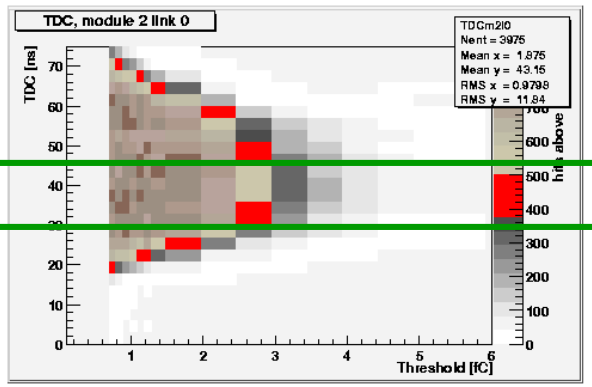


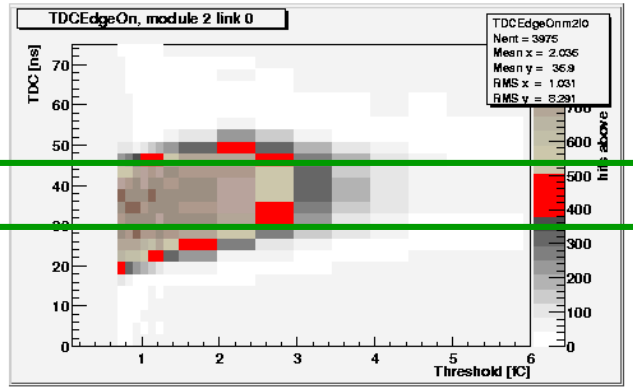
TDC vs. Threshold, Edge Off



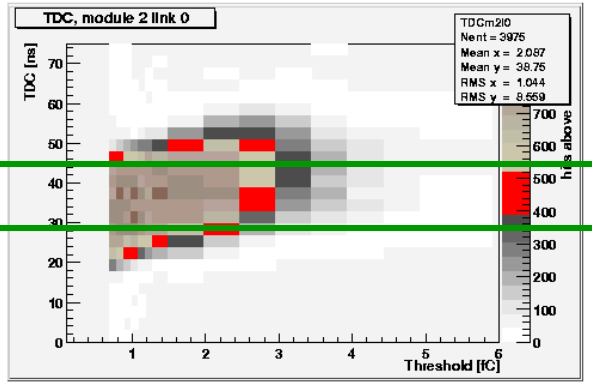
TDC vs. Threshold
Edge On

Edge ON/OFF





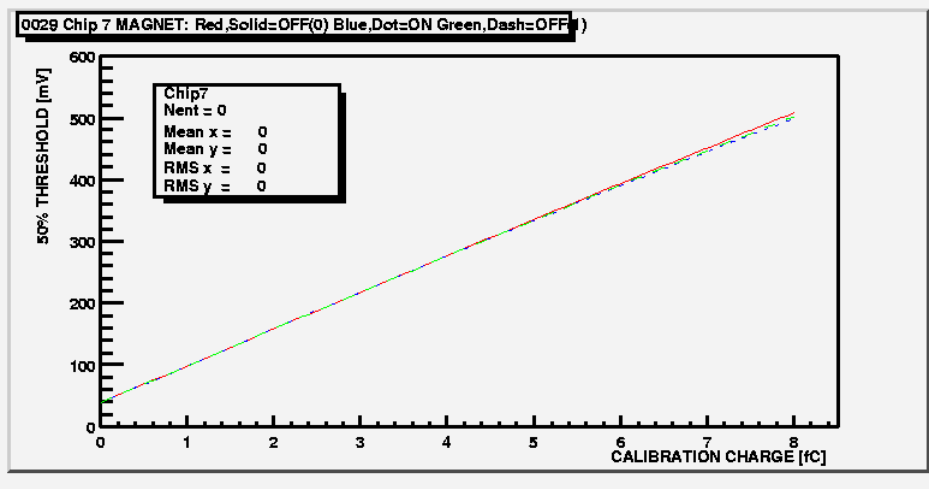
TDC vs. Threshold, Edge Off



TDC vs. Threshold
Edge On

Magnet ON/OFF Response Curve study

Module 0029 (barrel)



Gain differences observed:
11 chips: < 0.2 mV/fC
1 chip : < 1 mV/fC

conclusion: dependence of
Response Curve vs. magnetic field
was not observed ☺

Pavel Reznicek