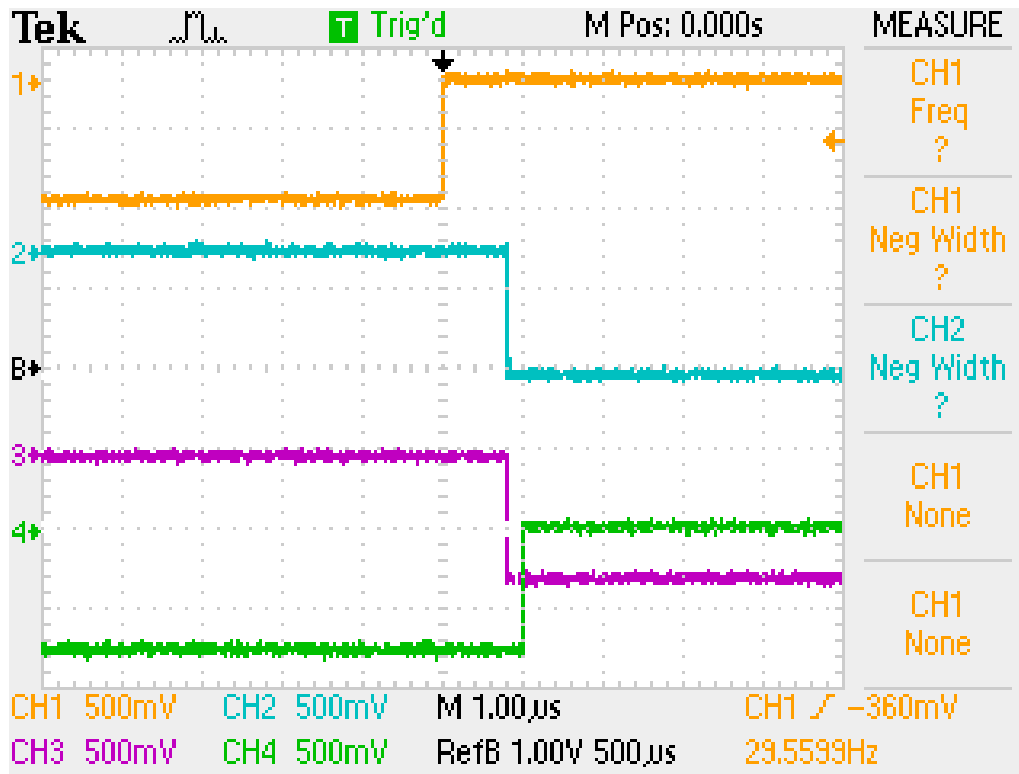


Mott DAQ Timing

R. Suleiman
January 29, 2013

Helicity Signals Timing

T_Settle starts 1.0 μ s earlier than all other helicity signals



T_Settle

Pair-Sync

Pattern-Sync

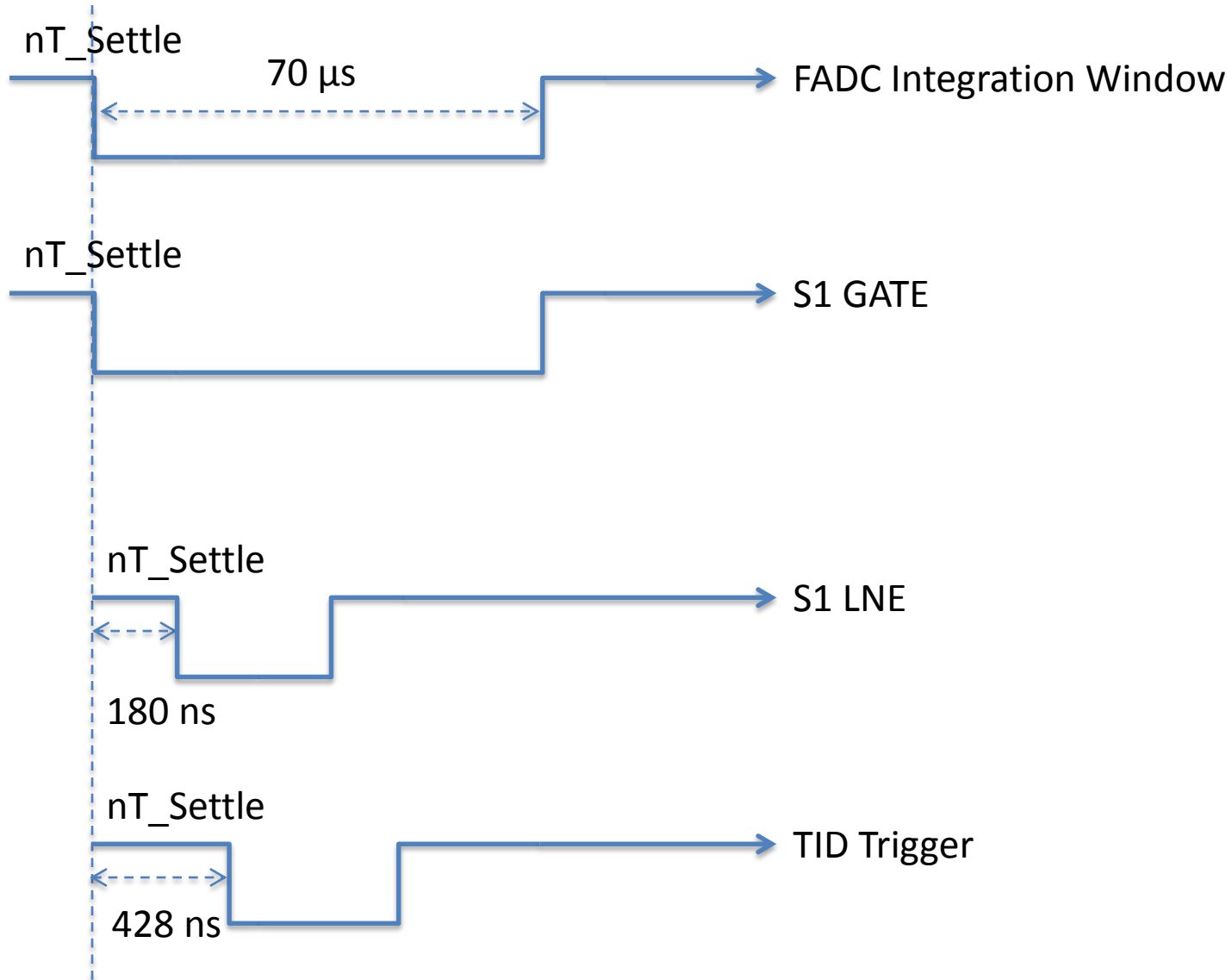
Delayed Helicity

$$\Delta T(\text{nTSettle-Delayed Hel}) = 950 \text{ ns}$$

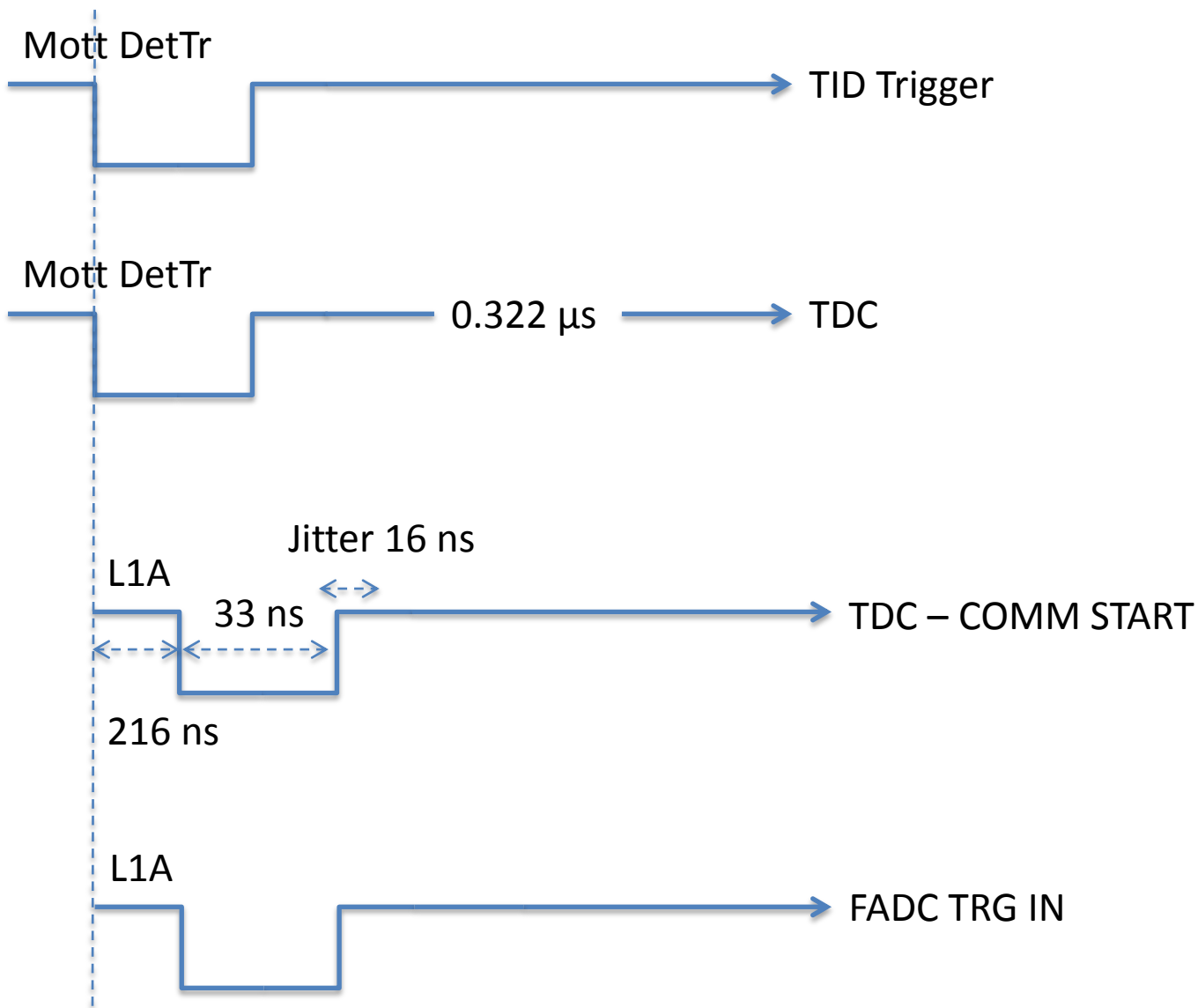
$$\Delta T(\text{nTSettle-PatSync}) = 1.1 \text{ us}$$

$$\Delta T(\text{nTSettle-PairSync}) = 940 \text{ ns}$$

Scalers / FADC_Int



Mott Signals



Busy Delays

All the measurements were done using the configuration (or control readout list “crl”) files used during the data taking.

TOT Busy (us)	Mode	Use	Channels
47.6 - 52.4	FADC Int	Electron production	At 30 and 960Hz
214	Mott Sample	Mott production	

Busy Delays

The evaluation of the busy signal for each single piece was done starting from the configuration files used during the data taking. To evaluate each contribution all the other boards were removed from “trigger” session of the crl file. ONLY the correspondent board was read.

Busy (us)	Module	Mode	
106	FADC	Mott Sample	16 channels and 500 samples
83	FADC	Mott Sample	16 channels and 148 samples
25 - 26	FADC	FADC_Int	16 channels
14.8 – 17.4	TDC		
31 - 32	Scalers (S1+S2)		Both boards together
11.8 - 13.2	Scaler S1		Only Scaler S1
8.8 - 9.9	All the environment		NO readout of any board

Delays & Signals

Signal	Delay	Width	Jitter
S1 LNE = nTSettle delayed	180ns	70us	
TID Trigger = nTSettle delayed	428ns	70us	
TDC Mott Det .Trigger	322ns		
L1A - Det. Trigger	216ns	33ns	16ns
L1A FADC Tr input	1.8us		
TDC PEPPo Detectors	760ns		
TDC CH19 (TS1)	812ns		
TDC CH21 (TS1B)	912ns		
121kHz clock	8.16us		
TS1 octal unit PEPPo NIM crate	252ns	158ns	
PMT5 (FCD)	165ns		

220ns ribbon cable + 510 JLab discl + 10ns modules delay

Signals from Mott LVT2, Coincidence signal

Signal from PEPPo Lin Fan In/Out, cable delay only (156ns)

Signal	Amplitude	Width
TTL detector signals in S2	+5V	20ns
NIM detector signals in S1	-0.7V	20ns

From PEPPo LVT