DESPEC Online/Nearline Histograms

Andrew Mistry

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Note: Information on individual histograms can also be found in the browser under the 'info' tab

1 FRS

1.1 Scalers

FRS Scalers given per 1s, 0.1s and per spill

1.2 SCI

1.2.1 SCI(2,4)

FRS Scintillators VME (SCI 21, 22 41, 42) e.g.
SCI(2:1)_L : *Scintillator 21 Left VME*
SCI(2:1)_R : *Scintillator 21 Right VME*
SCI(2:1)_E : *Scintillator 21 Energy VME*
SCI(2:1)_Tx : *Scintillator 21 dT(Left - Right) VME*
SCI(2:1_X : *Scintillator 21 X position (mm) VME*

1.2.2 TOF

SCI ToF 21, 41, 42 e.g.
SCI_21_41_TofLL/RR : *SCI21→SCI41 ToF LeftLeft and RightRight (ps)*

1.3 ID

ID_AoQ : *A/Q*
ID_AoQ_corr : *A/Q corrected for angle at S2*
ID_Z1 : *Z from Music 1*
ID_Z2 : *Z from Music 2*
ID_Z1_dE2 : *Z from Music 1 vs dE Music 2*
ID_Z1_Sc21E : *Z from Music 1 vs SCI 21 Energy*
ID_Z1_x2Z1/ID_Z_x4Z1 : *S2/S4 position vs Z Music 1*
ID_dE_x2/ID_dE_x4 : *S2/S4 position vs dE Music 1*
ID_x2_a2/ID_x2_b2 : *S2 X position vs angle at S2 X(a) Y(b) (same for Y as ID_y2_a2 etc)*
ID_x4_a4/ID_x4_b4 : *S4 X position vs angle at S4 X(a) Y(b)*
ID_x2_x4 : *S2 X position vs S4 X position*
ID_SC41dE_AoQ : *dE SCI41 vs A/Q*
ID_beta : *beta value v/c*
TOF_4121_MHTDC : *MHTDC ToF SCI41→ 21*
TOF_4221_MHTDC : *MHTDC ToF SCI42→ 21*
ID_dEToF : *Music 1 dE vs ToF SCI21 → 41*
ID_BRho0/1 : *Brho 1st/2nd stage (Tm)*
ID_x2AoQ : *S2 X position vs A/Q*
ID_x2AoQ : *S4 X position vs A/Q*
ID_Z1_AoQ : *Z Music 1 vs A/Q*
ID_Z1_AoQ_zsame : *Z Music 1 vs A/Q (abs(Z1-Z2)¡0.4)*
ID_Z1_AoQ_S2_S4corr : *Z Music 1 vs A/Q angle at S2 corrected*
ID_dEdegoQ_Z1 : *Z Music 1 vs dE (S2 degrader)/Q (for high charge states)*
ID_dEdeg_Z1 : *Z Music 1 vs dE (S2 degrader) (for high charge states)*
ID_Z1_Z2 : *Music 1 Z vs Music 2 Z*

1.4 TPC

1.4.1 TPC21 (22,23,24...)

TPC21_X or Y : *TPC21 X or Y position (mm)*
TPC21_XY : *TPC21 XvsY position*
TPC21_LTRT : *TPC21 Left T vs Right T (channels)*

S2_X or Y : *S2 X or Y position (mm)*
S2_angA or B : *S2 angle X(A) or Y(B)*
Note: similar for S4 X,Y and angles

1.5 MUSIC

1.5.1 MUSIC(1)/(2)

Energy : *Music 1 or 2 energy for each anode 0-7*
Time : *Music 1 or 2 time for each anode 0-7*

1.6 VFTXSCI

Scintillator signals in the VFTX module
PosRaw21 : *Sci21 position uncalibrated*
ToFraw2141 : *ToF SCI21→41 uncalibrated*
Similar for SCI 21,22,42

1.7 ID_Gated

Number of PID gates can be specified. These histograms show the result of gating on various parameters in the FRS. Note: There are as many Z1 vs Z2 gates as needed and defined for the single 2D gate, but for the Z1 vs. Z2 AND X2/X4AoQ gates only one Z1 vs. Z2 gate can be selected for simplicity (gate number selected in /Configuration_Files/DESPEC_General_Setup/Correlations_config.dat)

1.7.1 Z1AoQ

Z1AoQGated : *Z vs A/Q gate → Z vs A/Q*
Z1AoQ_Z1Z2Gated : *Z1 vs Z2 gate → Z vs A/Q*
Z1AoQ_Z1Z2_X2AoQGated : *Z1 vs Z2 gate (only one defined) and S2 X position vs A/Q → Z vs A/Q*
Z1AoQ_Z1Z2_X4AoQGated : *Z1 vs Z2 gate (only one defined) and S4 X position vs A/Q → Z1 vs A/Q*
Z1AoQ_Z1Z2_X4AoQGated : *Z1 vs Z2 gate (only one defined) and S4 X*

position vs A/Q → Z1 vs A/Q
Z1AoQ_X2AoQGated : *S2 X position vs A/Q gate → Z vs A/Q*
Z1AoQ_X4AoQGated : *S4 X position vs A/Q gate → Z vs A/Q*
ZA1oQ_dEdegZGated : *Energy loss in S2 degrader vs Z1 gate → Z vs A/Q (also for corrected angle A/Q and Z1 and Z2 similar value)*

1.7.2 Z1Z2

Only shows the Z1 vs Z2 gates applied for checking

1.7.3 x2AoQ

x2AoQ_Z1Z2Gated : *Z1 vs Z2 gate→S2 X position vs A/Q*
x2AoQ_x2AoQGated : *S2 X position vs A/Q →S2 X position vs A/Q*
x2AoQ_x4AoQGated : *S4 X position vs A/Q →S2 X position vs A/Q*
Same for x4AoQ but with S4 X positions

2 AIDA

2.1 Unpacker

FEEX/FeeX_L/H_ChannelY : *Raw FEE card X channel Y data (L: Low energy) and (H: High Energy)*

2.2 Scaler

Pulser : *AIDA Scaler 1 (Pulser)*
Pulser Copy : *AIDA Scaler 2 (Pulser Copy)*
Time Machine Original : *AIDA Scaler 3 (Time Machine signal 1)*
Time Machine Delayed : *AIDA Scaler 4 (Time Machine signal 2)*
Time Machine : *AIDA Time Machine dT*

2.3 Implants

DSSDX_implants_strip_XY : *DSSD X Implant hit pattern (strip number)*
DSSDX_implants_energy : *DSSD X Implant energy*
DSSDX_implants_time_delta : *DSSD X Implant front -back time*
DSSDX_implants_strip_1d : *DSSD X Implant hit pattern 1D*
DSSDX_implants_per_event : *DSSD X Implants per event*
DSSDX_implants_x_ex : *DSSD X Implant Energy X vs X position*
DSSDX_implants_y_ey : *DSSD X Implant Energy Y vs Y position*

2.4 Decays

DSSDX_decays_strip_XY : *DSSD X Decay hit pattern (strip number)*
DSSDX_decays_energy : *DSSD X Decays energy*
DSSDX_decays_time_delta : *DSSD X Decays front -back time*
DSSDX_decays_strip_1d : *DSSD X Decays hit pattern 1D*
DSSDX_decays_per_event : *DSSD X Decays per event*

DSSDX_implants_channels : *DSSD X Implant multiplicity*
DSSDX_decays_channels : *DSSD X Decay multiplicity*

3 FATIMA VME

3.0.1 Unpacker

Energy/Raw/E_Raw_LaBrCh.X : *Non gain-matched FATIMA QDC channel X*
Timing/Raw/TRaw_LaBrCh.X : *Raw FATIMA TDC channel X*

3.1 Energy

EnergyCalib/LaBr_ECalib_Ch.X : *Gainmatched FATIMA QDC Ch.X*
Fat_VME_EnergySum : *Sum Fatima gainmatched QDC all channels*

3.2 Timing

TDC_REF-TDC_DT/TDCdT_Cha_LaBr01_LaBrX : *TDC reference channel - TDC Channel X*
SC41_TDC_dT/TDCdT_SCI41_LaBrX : *SCI41 - TDC Channel X*
SC41_L_R dT *Fatima VME SCI41 signals left-right*

3.3 Stats

QDC_FAThits : *Fatima QDC hits/channel*
TDC_FAThits : *Fatima TDC hits/channel*
Fatima_VME_Multiplicity : *Fatima VME Multiplicity*

4 FATIMA TAMEX

Lead_Fine/Lead-FineCh.X : *Lead Fine time*
Lead_Coarse/Lead-CoarseCh.X : *Lead Coarse time*
LeadT/Lead_/Lead Time Ch. X : *Lead Time*
TrailT/Trail_/Trail Time Ch. X : *Trail Time*
LeadRef-Lead/Lead-Lead Time Red Ch1 - Ch.X : *Lead reference channel - Lead Channel X*
ToT/ToT Ch. X : *Time/Threshold (energy) Channel X*
ToTSum : *Sum of ToT all detectors (only FATIMA, SCI and Time machine signals removed)*
Fatima_Hitpattern : *Hit pattern/Channel*
Fatima_Multiplicity : *Multiplicity all*

5 bPlastic

LeadTime/Lead T Plas Det. 1/2 Ch.X : *Lead Time bPlast 1 or 2 channel X*
TrailTime/Trail T Plas Det. 1/2 Ch.X : *Trail Time bPlast 1 or 2 channel X*

ToT/ToT Plas Det. 1/2 Ch.X : *Time over threshold (energy) bPlast 1 or 2 channel X*
Lead-Lead_Ref/Lead-Lead Plas Det. 1/2 RefCh. - Ch.X : *dT(Lead Time for bPlast 1 or 2 channel X - bPlast 1 or 2 reference channel)*
SC41L_Ana_Lead_bPlas_Ref/SC41L_Ana_Lead bPlas Det 1/2 Ch.X : *dT(Lead Time for bPlast 1 or 2 channel X - SCI41 Left analogue signal) in bPlast TAMEX*
SC41R_Ana_Lead_BPlas_Ref/SC41R_Ana_Lead bPlas Det 1/2 Ch.X : *dT(Lead Time for bPlast 1 or 2 channel X - SCI41 Right analogue signal) in bPlast TAMEX*
SC41R_Ana_Lead_BPlas_Ref/SC41L_Digi_Lead bPlas Det 1/2 Ch.X : *dT(Lead Time for bPlast 1 or 2 channel X - SCI41 Left digital signal) in bPlast TAMEX*
SC41R_Ana_Lead_bPlas_Ref/SC41R_Digi_Lead bPlas Det 1/2 Ch.X : *dT(Lead Time for bPlast 1 or 2 channel X - SCI41 Right digital signal) in bPlast TAMEX*
SC41/Analogue L-R : *SCI41 Left- Right analogue signal in bPlast TAMEX*
SC41/Digital L-R : *SCI41 Left- Right digital signal in bPlast TAMEX*
ToT_Sum_Det.1/2 : *Sum ToT for bPlast 1 or 2*

5.1 Stats

HitPattern_Det. 1/2 : *Hit pattern for bPlast 1 or 2*
Multiplicity_Det. 1/2 : *Multiplicity for bPlast 1 or 2*

To be implemented: **PQDC/PQDC Plas Det. 1/2 Ch.X** : *QDC (energy) for bPlast 1 or 2 channel X*

6 Germanium

6.1 Sum

Germanium_ESum_1keV : *Germanium gainmatched energy sum binned to 1keV (no addback)*
Germanium_ESum_0_5keV : *Germanium gainmatched energy sum binned to*

0.5keV (no addback)
Germanium_Addback_1keV : *Germanium gainmatched addback energy sum binned to 1keV*
Germanium_Addback_0_5keV : *Germanium gainmatched addback energy sum binned to 0.5keV*
Germanium_Addback_dT : *Addback dT*
Germanium_GammaGamma_dT : *Germanium gamma-gamma dT*
Germanium_E_Mat : *Germanium Gamma-Gamma Matrix*
Germanium_E_CrystalID : *Energy vs. Crystal number*

6.2 Stats

Germanium_Multiplcity : *Germanium Multiplicity*
Germanium_Hit_Pat : *Germanium channel hit pattern*
Germanium_Mult_vsGamGamdT : *Germanium Multiplicity vs. Gamma-Gamma dT*

Energy_Ch_1keV/Germanium_E_Det_X_Y : *Germanium energy detector X channel Y binned to 1keV*
Energy_Ch_0_5keV/Germanium_E_Det_X_Y :*Germanium energy detector X channel Y binned to 0.5keV*

6.3 SCI41

Germanium_ESum_SC41L_ana *FEBEX SC41 left Analogue Signal*
Germanium_ESum_SC41R_ana : *FEBEX SC41 right Analogue Signal*
Germanium_ESum_SC41L_digi : *FEBEX SC41 left Digital Signal*
Germanium_ESum_SC41R_digi : *FEBEX SC41 right Digital Signal*

7 WR

7.1 AIDA

Aida_Implant-FRS_WR_dT : *Aida Implant - FRS White Rabbit dT*
Aida_Implant-bPlast_WR_dT : *Aida Implant - bPlast VME White Rabbit dT*
Aida_Decay-bPlast_WR_dT : *Aida Decay - bPlast White Rabbit dT*
Aida_Decay-Germanium_WR_dT : *Aida Decay - Ge FEBEX White Rabbit dT*
Aida_Decay-FatimaVME_WR_dT : *Aida Decay - Fatima VME White Rabbit dT*

7.2 Others

bPlast_FatimaVME_dT : *bPlast - Fatima VME White Rabbit dT*
bPlast_Germanium_dT : *bPlast - Ge FEBEX White Rabbit dT*
FatimaVME_Germanium_dT : *Fatima VME - Ge FEBEX White Rabbit dT*
FRS_Germanium_dT : *FRS - Ge FEBEX White Rabbit dT*
FRS_bPlast_dT : *FRS - bPlast White Rabbit dT*
FRS_FatimaVME_dT : *FRS - Fatima VME White Rabbit dT*
FRS_FatimaTAMEX_dT : *FRS - Fatima TAMEX White Rabbit dT*
FatimaVME_FatimaTAMEX_dT : *Fatima VME - Fatima TAMEX White Rabbit dT*
bPlast_FatimaTAMEX_dT : *bPlast- Fatima TAMEX White Rabbit dT*

8 TimeMachine

8.1 Systems_dT

Contains single time machine dT(Ch.1 - Ch.2) for each subsystem

8.2 Correlations_matrices

Contains subsystem 1 vs. subsystem 2 matrices for correlations monitoring

9 Correlations

Note: There are as many Z1 vs Z2 gates as needed and defined for the single 2D gate, but for the Z1 vs. Z2 AND X2/X4AoQ gates only one Z1 vs. Z2 gate can be selected for simplicity (gate number selected in /Configuration_Files/DESPEC_General_Setup/Correlations_config.dat)

9.1 AIDA-FRS

- Implantation profile for ions

All/ : *All implant registered hits*

Stopped/ : *Stopped implant registered hits (further downstream DSSD does not fire)*

Z1vsAoQ : *FRS Z1 vs A/Q gated:*

Z1vsAoQ_GateG/DSSD_XY : *FRS Z vs A/Q PID gate number G: Implants in DSSDs for strips X vs. Y*

Z1vsAoQ_GateG/DSSD_Position : *FRS Z1 vs A/Q PID gate number G: Implants in DSSDs for Position in mm*

Z1vsAoQ_GateG/DSSD_XY : *FRS Z1 vs A/Q PID gate number G: Implants in DSSDs Energy*

Same histograms as above but for gates:

Z1 vs Z2 : *FRS Z1 vs Z2 gated*

Z1Z2_x2AoQ : *FRS Z1 vs. Z2 AND X2 position vs. A/Q gated*

Z1Z2_x4AoQ : *FRS Z1 vs. Z2 AND X4 position vs. A/Q gated*

9.2 FRS-Prompt Ge

- Prompt Isomers in Germanium

Z1vsAoQ_Ge : *FRS Z1 vs A/Q gated:*

SinglesEnergy/Ge_EnergySum_Z1vsAoQ_GateG : *Germanium singles for PID gate number G*

Gamma-Gamma/GeE1_vs_GeE2_Z1vsAoQ_GateG : *Germanium gamma-gamma matrices for PID gate number G*

GeE_vs_FRSGe_dT/GeE_vs_FRSGe_dT_Z1vsAoQ_GateG : *Germanium Ge Energy vs dT(SCI41[FEBEX signal]-Ge Time) matrices for PID gate number G*

Note: The above matrix may be changed from dT (SCI41-Ge Time) to dT(FRS White rabbit - Ge White Rabbit)
Same histograms as above but for gates:
Z1Z2_x2AoQ : *FRS Z1 vs. Z2 AND X2 position vs. A/Q gated*
Z1Z2_x4AoQ : *FRS Z1 vs. Z2 AND X4 position vs. A/Q gated*

9.3 FRS_LongCorrelation_Ge

- For longer isomers >20mus. The time windows can be defined in /Configuration_Files/DESPEC_General_Setup/Correlations_config.dat

Z1vsAoQ_Gated/Ge_SinglesEnergy_LongCorrelationTime : *FRS Z1 vs A/Q gated:Ge Energy singles for longer correlation times*
Z1vsAoQ_Gated/dT_vs_GeE_LongCorrelationTime : *FRS Z1 vs A/Q gated: Ge Energy singles vs dT(Ge - FRS White Rabbit) for longer correlation times*
Z1vsAoQ_Gated/GeE1_vs_GeE2_LongCorrelationTime : *FRS Z1 vs A/Q gated: Gamma-Gamma matrix for longer correlation times*

9.4 FRS-Fatima

- Prompt Isomers in Germanium **Z1vsAoQ_Ge** : *FRS Z1 vs A/Q gated:*
SinglesEnergy/Fat_EnergySum_Z1vsAoQ_GateG : *Fatima singles for PID gate number 'G'*
Gamma-Gamma/FatE1_vs_FatE2_Z1vsAoQ_GateG : *Fatima gamma-gamma matrices for PID gate number 'G'*
FatE_vs_FRSFat_dT/GeE_vs_FRSFat_dT_ZvsAoQ_GateG : *Fatima Energy vs dT(SCI41[FEBEX signal]-Ge Time) matrices for PID gate number 'G'*
Note: The above matrix may be changed from dT (SCI41-Fatima Time) to dT(FRS White rabbit - Fatima White Rabbit)
-Lifetime energy gates and PID gate selection defined in: /Configuration_Files/DESPEC_General_Setup/Correlations_config.dat
Lifetime/Start-Stop/FRS_Fat_LTG_start_stop : *Fatima dT(start level - stop level) (in ps) for Lifetime gate 'G'*
Lifetime/Stop-Start/FRS_Fat_LTG_stop_start : *Fatima dT(stop level -*

start level) (in ps) for Lifetime gate 'G'
Lifetime/Start-Stop/FRS_Fat_LTG_start_stop_ns : *Fatima dT(start level - stop level) (in ns) for Lifetime gate 'G'*
Lifetime/Stop-Start/FRS_Fat_LTG_stop_start_ns : *Fatima dT(stop level - start level) (in ns) for Lifetime gate 'G'*
Same histograms as above but for gates
Z1Z2_x2AoQ : *FRS Z1 vs. Z2 AND X2 position vs. A/Q gated*
Z1Z2_x4AoQ : *FRS Z1 vs. Z2 AND X4 position vs. A/Q gated*

9.5 Beta_Delayed_Gammas

Aida Implant-Decay gated (with/without bPlastic detectors). Gates defined in /Configuration_Files/DESPEC_General_Setup/Correlations_config.dat

9.6 Germanium

dT(Implant-Decay)/Implant-DecaydT_PIDGateX : *Implant-Decay dT PID gate 'G' if germanium fires*
Ge_Energy_ImplantDecay_All : *Germanium Energy Implant-Decay all*
dT(Implant-Decay)_All : *Implant-Decay all, germanium fires*
Energy/Ge_BetaGam_Energy_PIDGatedG : *Germanium Energy Implant-Decay PID gate 'G'*
Energy/Gamma-Gamma/Ge1Ge2_BetaGam_PIDGate : *Germanium Gamma-Gamma Implant-Decay PID gate 'G'*
Energy/EnergyvsdT(Implant-Decay)/Ge_BetaGam_EnergyvsdT_GateG : *Germanium Energy vs dT(Implant-Decay) PID gate 'G'*

9.7 Fatima

Note: FATIMA can be disabled for this part in the config file if not required/
Energy/Fat_BetaGam_Energy_PIDGatedG : *Fatima Energy Implant-Decay PID gate 'G'*
Energy/Gamma-Gamma/FatE1FatE2_BetaGam_PIDGate : *Fatima Gamma-Gamma Implant-Decay PID gate 'G'*

-Lifetime energy gates and PID gate selection defined in: /Configuration_Files/DESPEC_General_Setup/Correlations_config.dat

Lifetime/Start-Stop/Fat_LTG_BetaGam_start_stop : *Fatima dT(start level - stop level) for Lifetime gate 'G' (ps)*

Lifetime/Stop-Start/Fat_LTG_BetaGam_stop_start : *Fatima dT(stop level - start level) for Beta delayed gammas with Lifetime gate 'G' (ps)*

Lifetime/Start-Stop/Fat_LTG_BetaGam_start_stop_ns : *Fatima dT(start level - stop level) for Lifetime gate 'G' (ns)*

Lifetime/Stop-Start/Fat_LTG_BetaGam_stop_start_ns : *Fatima dT(stop level - start level) for Beta delayed gammas with Lifetime gate 'G' (ns)*