Hierarchy of the HDF files

- Beamlines
  - Attenuator
    - set pressure
    - status
    - transmission
  - BL
    - Apertures
      - BL2
        - position aperture
    - Fast shutter
      - shutter (raw)
    - Filters
      - BL filter wheel
        - position filter1
        - position filter2
      - BL2 Filter
        - position filter1
        - position filter2
    - Mirror positions
      - BL1M0.HOR.MOTOR.POS
      - BL1M0.ROT.MOTOR.POS
      - BL1M0.VER.MOTOR.POS
      - BL1M1.HOR.MOTOR.POS
      - BL1M1.ROT.MOTOR.POS
      - BL1M1.VER.MOTOR.POS
      - BL2M0.HOR.MOTOR.POS
      - BL2M0.ROT.MOTOR.POS
      - BL2M0.VER.MOTOR.POS
      - BL3M0.HOR.MOTOR.POS
      - BL3M0.ROT.MOTOR.POS
      - BL3M0.VER.MOTOR.POS
      - BL3M1.HOR.MOTOR.POS
      - BL3M1.ROT.MOTOR.POS
      - BL3M1.VER.MOTOR.POS
      - BL3M2.HOR.MOTOR.POS
      - BL3M2.ROT.MOTOR.POS
      - BL3M2.VER.MOTOR.POS
    - Screens
      - BL0M0 screen
      - BL1M0 screen
      - BL1M1 screen
      - BL2M0 screen
      - BL3M0 screen
      - BL3M1 screen
      - BL3M2 screen
      - L6 status
  - PG
    - ADC
      - PG2.0
      - PG2.1
      - PG2.10
      - PG2.11
      - PG2.12
      - PG2.13
      - PG2.14
      - PG2.15
      - PG2.2
      - PG2.3
      - PG2.4
      - PG2.5
      - PG2.6
      - PG2.7
      - PG2.8
      - PG2.9
    - ANDOR ICCD Camera (PG2)
      - DDG delay ns
      - DDG delay ps
      - DDG pulse width
      - gain
      - image
    - Apertures (WAU)
      - position horizontal
      - position vertical
      - width horizontal
      - width vertical
    - Fast shutter
      - shutter (raw)
    - Filters
      - position filter 1
      - position filter 2

        - position filter 3
- Mirror positions
    - M0
        - HOR.MOTOR.POS
        - ROT.MOTOR.POS
        - VER.MOTOR.POS
    - PG0M1
        - HOR.MOTOR.POS
        - ROT.MOTOR.POS
        - VER.MOTOR.POS
        - YAW.MOTOR.POS
    - SMU
        - BOTH.MTRANS.POS
        - PG1.MROTATEX.POS
        - PG1.MROTATEY.POS
        - PG1.MROTATEZ.POS
        - PG1.MTRANSX.POS
        - PG2.MROTATEX.POS
        - PG2.MROTATEY.POS
        - PG2.MROTATEZ.POS
        - PG2.MTRANSX.POS
- Monochromator
    - ALPHA
    - ANGLEMIRROR
    - CCF.INFO
    - LINESGRAT0
    - LINESGRAT1
    - LINESGRAT2
    - USEALPHA
    - USECFF
    - USEGRAT1
    - USEGRAT2
    - USEGRAT3
    - USENULL
    - cff
    - diffraction order
    - dispersion PG1
    - dispersion PG2
    - epsilon
    - grating angle
    - grating angle encoder
    - monochromator photon energy
    - position grating
    - position premirror
    - position trans
    - premirror angle
- PG2BSDEL
    - DLY.CURRENT
    - ENC.DELAY
- PG2BSTOOLS
    - M1.MOTOR.POS
    - M2.MOTOR.POS
    - M3.MOTOR.POS
    - M4.MOTOR.POS
- Screens
    - PG0
        - position BM1
        - position BM2B
        - position BM3
        - position LM1
    - PG1
        - position BM2A
        - position BM31
        - position BM41
        - position BM51
    - PG2
        - position BM32
        - position BM4
        - position BM6
        - position MCP screen
        - position WSU screen
- Splitter
    - M1.RX.POS
    - M1.RY.POS
    - M1.TX.POS
    - M1.TY.POS
    - M1.TZ.POS
    - M2.RX.POS
    - M2.RY.POS
    - M2.TX.POS
    - M2.TY.POS
    - M2.TZ.POS
    - M3.RX.POS
    - M3.RY.POS
    - M3.TX.POS

- M3.TY.POS
- M3.TZ.POS
- M4.RX.POS
- M4.RY.POS
- M4.TX.POS
- M4.TY.POS
- M4.TZ.POS

- WSU
  - PG1
    - dispersion
    - position exit slit
    - position motor slit
    - position motor trans
    - width exit slit
  - PG2
    - dispersion
    - longitudinal position exit slit
    - position motor slit
    - position motor trans
    - width exit slit
- WSU (exit slit)
  - PG2
    - FLAGSCREENFOC
    - FLAGSLITFOC

- Tunnel Apertures
  - horizontal offset aperture1
  - horizontal offset aperture2
  - position aperture1
  - position aperture2
  - position detector1
  - position detector2
  - vertical offset aperture1
  - vertical offset aperture2

- Electron Diagnostic
  - BAM
    - 4DBC3
      - electron bunch arrival time
  - BCM
    - 4DBC3.1
    - 4DBC3.2
    - 7ECOL
    - 9DBC2.1
    - 9DBC2.2
  - Beam position
    - position x at 13SMATCH
    - position x at 1SMATCH
    - position x at 5UND1
    - position x at 5UND3
    - position x at 5UND4
    - position x at 5UND6
    - position x at 6SMATCH
    - position y at 13SMATCH
    - position y at 1SMATCH
    - position y at 5UND1
    - position y at 5UND3
    - position y at 5UND4
    - position y at 5UND6
    - position y at 6SMATCH
  - Bunch charge
    - after accelerator
    - after undulator
    - at gun
    - before undulator
    - pulse charge
      - at dump
      - at gun
  - Electron energy
    - average electron energy
    - average electron wavelength
    - pulse resolved energy
    - wavelength bunch train average
    - wavelength slow average
    - wavelength used by GMD
  - Linac
    - ACC1 RF
      - ampl
      - phase
    - ACC23 RF
      - ampl
      - phase
    - ACC45 RF
      - ampl
      - phase
    - ACC67 RF
      - ampl

- phase
- Gun
  - pfor
- Gun RF
  - ampl
  - phase
- Vaccum
  - 15ACC7
    - open
- Lola
  - kicker
    - CH05
    - CH06
    - CH07
- TDS
  - Beam profile
    - CCT
    - DAQ.OUT.PROF
    - DAQ.OUT.PROF.CCCED
    - PATTERN.13SMATCH
    - POS.13SMATCH
    - PROFWIDTH
    - PROFWIDTHCCTED

- Experiment
  - Acqiris
    - CPCI1
      - CH00
        - BNDWDTH
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH01
        - BNDWDTH
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH02
        - BNDWDTH
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH03
        - BNDWDTH
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH04
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH05
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH06
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH07
        - COUPLNG
        - OFFSET
        - SCALE
        - TD
      - CH08
        - COUPLNG
        - OFFSET
        - SCALE
      - DAQ_MAX_SMPL
      - DAQ_N_SMPL
      - N_SMPL
      - SMPL_FREQ
      - TRG_DELAY
    - CPCI1-Bd2
      - CH00
        - BNDWDTH
        - COUPLNG
        - OFFSET
        - SCALE

- CH01
  - BNDWDTH
  - COUPLNG
  - OFFSET
  - SCALE
- CH02
  - BNDWDTH
  - COUPLNG
  - OFFSET
  - SCALE
- CH03
  - BNDWDTH
  - COUPLNG
  - OFFSET
  - SCALE
- N_SMPL
- SMPL_FREQ
- TRG_DELAY

- CPCI2
  - CH00
    - TD
  - CH01
    - TD
  - CH02
    - TD
  - CH03
    - TD

- BL1
  - ADQ412 GHz ADC
    - CH00
      - TD
    - CH01
      - TD
  - SIS8300 100MHz ADC
    - CH0
      - TD
    - CH1
      - TD
    - CH2
      - TD
    - CH3
      - TD
- BL2
  - ADQ412 GHz ADC
    - CH00
      - TD
    - CH01
      - TD
  - SIS8300 100MHz ADC
    - CH0
      - TD
    - CH1
      - TD
    - CH2
      - TD
    - CH3
      - TD
- BL3
  - ADQ412 GHz ADC
    - CH02
      - TD
    - CH03
      - TD
  - SIS8300 100MHz ADC
    - CH6
      - TD
    - CH7
      - TD
    - CH8
      - TD
    - CH9
      - TD
- Camera
  - Focus microscope
    -
      - ROI1.X
      - ROI1.Y
      - ROI2.X
      - ROI2.Y
    - image
- Gotthard1
  - BL.0
- MTCA Exp1
  - ADQ412 GHz ADC
    - CH00
      - TD

- CH01
  - TD
- SIS8300 100MHz ADC
  - CH4
    - TD
  - CH5
    - TD
- MTCA Exp2
  - SIS8300 100MHz ADC
    - CH4
      - TD
    - CH5
      - TD
- PG
  - ADQ412 GHz ADC
    - CH02
      - TD
    - CH03
      - TD
  - SIS8300 100MHz ADC
    - CH6
      - TD
    - CH7
      - TD
    - CH8
      - TD
    - CH9
      - TD
- PImMS camera delay
  - delay
  - status
- Pump probe laser
  - ADC
    - PP.0
    - PP.1
    - PP.2
    - PP.3
  - Streak cam jitter
  - Streak cam on
  - Synchronization
    - 216 MHz bucket found
    - 216 MHz voltage
    - RF lock status
    - piezo voltage
    - timing jitter RMS
  - crosscorrelator delay
  - delay line encoder
  - laser attenuation
  - laser delay
  - laser polarization
  - streak camera delay time
- Photon Diagnostic
  - BL1
    - Camera 3
      - image
    - Iccd8
      - image
  - Electron energy
    - wavelength used by GMD
  - GMD
    - Average energy
      - energy BDA
      - energy BDA (corr.)
      - energy tunnel
      - energy tunnel (corr.)
    - Beam position
      - position BDA x
      - position BDA y
      - position tunnelx
      - position tunnely
    - Expert stuff
      - BDA
        - BDA2:0
        - BDA2:1
        - BDA2:2
        - BDA2:3
        - BDA2:4
        - BDA2:5
        - BDA2:6
        - BDA2:7
        - BDA:0
        - BDA:1
        - BDA:2
        - BDA:3
        - BDA:4

- BDA:5
- BDA:6
- BDA:7
- CHAN.INCX
- CHAN.VMAX
- CHAN.VMIN
- CHAN.XMAX
- CHAN.XMIN
- CHAN_MODE
- CHAN_ON
- Gasmix
  - SYSGMDB
- Ion current
- PHPULSE
- calibration factor
- cross section
- dark current
- pressure
- status

- HV_GASDET1 HVA.ACTVOLT
- HV_GASDET1 HVB.ACTVOLT
- K6517GEB RANGE
- K6517GET RANGE
- RVC300 PRI.NUM
- RVC300A PRI.NUM
- S ADC CH00
- S ADC CH01
- S ADC CH04
- S ADC CH06
- SRG2CE
  - GASID.RAWCALC
  - RD
  - RD.SLOPE
  - ROTORSPEED
  - VALFLOAT
- SRG2CEA
  - GASID.RAWCALC
  - RD
  - RD.SLOPE
  - ROTORSPEED
  - VALFLOAT
- Tunnel
  - CH07.CALC
  - CHAN.INCX
  - CHAN.VMAX
  - CHAN.VMIN
  - CHAN.XMAX
  - CHAN.XMIN
  - CHAN_MODE
  - CHAN_ON
  - Gasmix
    - SYSGMDT
  - Ion current
  - PHPULSE
  - calibration factor
  - cross section
  - dark current
  - pressure
  - status
  - tunnel:0
  - tunnel:1
  - tunnel:2
  - tunnel:3
  - tunnel:4
  - tunnel:5
  - tunnel:6
  - tunnel:7
- VDOT32
  - REG_1_OUT
  - REG_2_OUT
  - REG_3_OUT
  - REG_4_OUT

- Pulse resolved energy
  - energy BDA
  - energy BDA (factor)
  - energy BDA (raw)
  - energy tunnel
  - energy tunnel (factor)
  - energy tunnel (raw)

- MCP
  - ADC
    - MCP2:0
    - MCP2:1
    - MCP2:2
    - MCP2:3

- MCP2:4
- MCP2:5
- MCP2:6
- MCP2:7
- CH04
- CH05
- CH06
- CH07
- DAC
  - CH04
  - CH05
  - CH06
  - CH07
- HV1 beamsplitter
- HV1 exit slot
- HV2 beam splitter
- HV2 exit slit
- mesh position x
- mesh position y

- Wavelength
  - Manually set
    - wavelength
  - PG2 spectrometer
    - Expert
      - FILTER09
      - NBUNCH
      - PXMM
      - X0
      - XEND
      - XSTART
    - photon energy
    - photon wavelength
  - Tunnelspectrometer
    - Flash2
      - wavelength
    - first bunch
    - last bunch
    - position incoupling mirror
    - position mono motor
    - set spectrometer wavelength
    - wavelength
  - VLS online spectrometer
    - PCO
    - PCO.ROI.X
    - PCO.ROI.Y

- Support Infrastructure
  - Pump probe laser
    - delay line enc1
    - sync enc1
    - sync enc2

- Timing
  - Bunch pattern
    - pattern after undulator
    - pattern at gun
  - Bunch train info
    - index 1
    - index 2
    - set pattern
  - repetition rate
  - set number of bunches

- uncategorised
  - Electron Diagnostic
    - BAM
      - 1UBC2:0
      - 1UBC2:1
      - 1UBC2:2
      - 1UBC2:3
      - 1UBC2:4
      - 1UBC2:5
      - 3DBC2:0
      - 3DBC2:1
      - 3DBC2:2
      - 3DBC2:3
      - 3DBC2:4
      - 3DBC2:5
      - 4DBC3:1 (coarse)
      - 4DBC3:2
      - 4DBC3:3
      - 4DBC3:4
      - 4DBC3:5
    - Gun
      - CMD booster
      - Devider 1 MHz
      - mains
  - Support Infrastructure

- EXP2 DAQ
  - Distributor
    - stream 2 event mask
    - stream 2 events
- PBD DAQ
  - Distributor
    - stream 2 event mask
    - stream 2 events
    - stream 4 event mask
    - stream 4 events

- Timing
  - Bunch pattern
    - 10DBC2
    - 11SMATCH
    - 1UBC3
    - 2SDUMP
    - 2UBC2
    - 5DBC3
    - 7ORS
    - 9DUMP
    - gun laser