1.3 smallData contents

The small data by default contains most analysis relevant point detector values, event IDs and markers. Below is a list with brief descriptions, roughly in order is relevance for most users. Fields in red are applicable for all hutches, either through smallData (fields in red) or the "default detector" setup (fields in magenta).

- lightStatus: contains binary sequence of laser and xray to indicate the light status.
- scan: values of the motors/virtual-motors that were being scanned. Also referred to commonly as the control PVs for the DAQ.
- tt: time tool correction values. tt/ttCorr contains the correction value with the calibration applied in the littleData creation. More details below.
- diode reading
    - XPP:
        - ipm2: beamline I zero, down stream of the Be lens, upstream from the attenuators.
        - ipm3: last beamline I zero before the beam exit the beamline diamond window.
        - diodeU: user point detectors, usually referred to as user IPM.
        - ipm1, ipm1c: beamline I zero upstream in hutch 2, largely irrelevant for user analysis
        - ipm_hx2: beamline I zero upstream in hutch 2, wave8 version. Only useful for experiments in pink beam.
        - lombpm: dectris quad detector on the LODCM diagnostic tower.
        - lomdiode: additional PIPS diodes in the LODCM. ch0 is the PIPS diode on the LODCM diagnostic tower for photon energy calibration. ch1 is the PIPS diode on the LODCM 2nd xtal tower for initial alignment of the second crystal.
    - XCS:
        - ipm4: beamline I zero, upstream from the attenuators.
        - ipm5: last beamline I zero before the beam exit the beamline diamond window.
        - snd_dio: set of 8 diodes in split&delay
- enc: readback position of selected motors. Typically contains "lasDelay" for the calibcycle-less way to doing delay scans at XPP/XCS. enc /lasDelay is in ps (as is the time tool per event correction)
- damage: binary data about the status of detectors in the data. If 0 for a used detector, then the event need to be rejected
- epics: common EPICS PVs (slits, goniometer motors and a few standard laser motors)
- epicsUser: user added experiment specific PVs (user motors, temperatures of cryojets/lakeshore read backs,...)
- ebeam: electron beam parameters, most typically used ones are L3Energy, which is the electron energy measured at the beginning of the undulator, and is related to the actual photon energy of each pulse.
- phase_cav: the output value of the JoeFrisch phase cavity for electron beam arrival time monitoring. A good indicator for the machine overall timing status and used for timing correction in the early days. Less used nowadays since ‘tt’ took over.
- gas_detector: FEE gas detector measurement for pink beam pulse energy, this is upstream from the HOMS.
- adc: analog input out/put voltages.
- evr: contains binary event code status for each event code, such as Evr/140.
- fiducials/event_time/EvtID(old): contains the event fiducial and time stamp
- l3t: level 3 trigger status used during the data acquisition, the threshold were setup typically by xpppython.
- "UserData": these are generated by user plug-ins such are ROI etc and have names defined by the user. This is described more <here>.
- UserDataCfg: configuration information.

If you have older data, the fields might have somewhat different names, but they should be similar enough to find them in this list.

Timetool information:
In addition to tt/ttCorr ,we keep the results of the online algorithm (on which ttCorr is also based). The algorithms fits a step in the ratio of the current events data and a reference image. The step position corresponds to a given time delay between the optical and X-ray laser.

- FLTPOS The step position in pixels
- FLTPOS_PS The step position in pico seconds. This uses the calibration available while the data was taken.
- FLTPOS_FWHM The step width. This is a useful variable to decide if a fit is believable.
- AMPL The step amplitude. Should correlate with the X-ray intensity (e.g. IPM2/sum).