EPICS Support for 1-D and 1.5D Detectors

History

EPICS support for 2-D detectors, such as video cameras, x-ray area detectors, etc. has now coalesced behind the areaDetector framework. The lowest level classes in areaDetector are the NDArray, which defines an N-dimensional array, and the asynNDArray, which defines the asyn interfaces to support the NDArray. Many of the areaDetector plugins also work with NDArrays of any dimension, they are not limited to 2-D arrays, or 3-D arrays for color cameras. Much of areaDetector is thus not specific to 2-D detectors, and areaDetector is in fact are being used to a limited extent at present for other types of detectors. For example they are used for the XIA spectroscopy detectors in the “dxp” application, for the Quantum Detectors Xspress3, and for the quad electrometers in the quadEM application.

However, most 1-D detectors do not currently use the areaDetector framework. There would be definite benefits in doing do, because many of the plugins could be used directly, for example for statistics calculations, file saving, etc.

At the EPICS areaDetector meeting at Diamond on October XXX, 2014 Nick Rees and I were tasked with defining a new class or classes that would be specific to 1-D detectors in the way that the ADDriver base class is specific to 2-D detectors. By 1-D detectors here we mean detectors whose primary data is 1-D. Examples include multichannel analyzers (MCA) which represent a histogram of counts as a function of energy; multichannel scalers (MCS) which represent counts as a function of time; waveform digitizers, transient recorders, and oscilloscopes that represent voltage as a function of time. Many of these devices can be “1.5 D”