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**Line scan analysis**

There are some basics methods for line scan analysis. They are divided in two broad categories

1. Data manipulation and detrend before analysis
2. Data analysis

**Data manipulation and detrend**

Data can be binned along the columns. This is equivalent to bin the huge vector.

Data can be binned in rows. This is NOT equivalent to bin the huge vector.

Data can be represented in different ways, but substantially, the carpet is the normal representation.

The time of one line is the basic time for the carpet analysis, but for other types of analysis the pixel dwell time is important as well.

Still (I apologize for this) the two time are not completely separated in the program, since for historical reason, this part of the software was developed for circular scan. For circular scan, the pixel dwell time can be used to calculate the orbit time if you know the point in the line. I am cleaning up this mess and we will have two separate entries for the pixel dwell time and for the line scan.

**Detrend**

Unless sophisticated data fit is available top separately fit the bleach or other very slow processes, it is desirable to detrend the data for the slow variations. This is done by applying a “high pass” filter procedure to the data. For sparse data, i.e., data that come from a photon counting instrument, the only good way I know to detrend the data for slow variations is to add random uncorrelated counts so that the average intensity become uniform along the time trace on the time scale in which the variations need to be filtered out.

For data from analog detection, the detrend operation can be performed.