Data Loading

A DataArray is a numpy array with named, valued coordinates and metadata attributes. Sometimes multiple arrays share one or more of the same coordinates and attributes so it's nice to keep them in a single object. This is a DataSet. A DataSet has coordinates and attributes like a DataArray but has more than one array which shares those coordinates.

PyArpes' first task is to load in one or more data files associated with a single scan and put the data into a DataSet in a consistent way.

TODO

The process of loading data is (maybe unnecessarily) complicated. If possible, it should be simplified. I will need to see the form of data when initially loaded and see if there's a better way to get to the final product. The current steps (identify files for single scan, load single frame, process each frame, combine frames, process full scan) are logical but I feel steps need to be placed more exclusively. For example, for Maestro data, keys are renamed I believe 3 times. Once on single frame processing, again in full scan processing, and finally in the Maestro load function. If possible, all renaming should either happen for each frame before concatenating, or only once for the full scan.

1. Load data from file into 3 dictionaries: coordinates, data, metadata. Data must have at least one coordinate in coords
2. Throw data into a DataSet without changing the names of anything. Deliver this as a single frame
3. process frames and concatenate them (Maybe do renaming here)
4. process scan (rename here if not before but never twice)

in the future, people might want to rename keys in a more complicated way. It's important that there's a single place to correctly do it to avoid a debugging mess when trying to rename something.