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## PLOTING XES DATA ON ENERGY LOSS SCALE ##
## Creates an object named XES to load XES DATA, EITHER TOTAL OR SUMMED OVER SPECIFIC ENERGIES
ELOSS = ELOSSLoader()

## LOADING/ADDING/SUBSTRACTING 1-D/REDUCED DATA FROM A FILE ##
## Loads XES scans data from HDF5 file
ELOSS.load(config,'filename', 'detector', *args, **kwargs)
## *args = comma seperated list of scans to be plotted or added and then plotted

## Loads and sums XES scans data from HDF5 file
ELOSS.add(config,'filename', 'detector', *args, **kwargs)
## *args = comma seperated list of scans to be plotted or added and then plotted

## Loads and subtratcs XES scans data from HDF5 file
ELOSS.subtract(config,'filename', 'detector', *args, **kwargs)
## *args = s1, p1 -> The data from p1 is subtracted from s1
## *args = [s1, ..., sn], [p1, ..., pn] -> The sum of p1..pn is sub. from the sum s1...sn

## Loads and stitches non-overlapping regions
ELOSS.stitch(config,'filename', 'detector', *args, **kwargs)
## *args = comma seperated list of scans to be stitched
## NOTE: The the scans are appended in order, overlap discared

## Loads and subtract scan from all previously loaded scans
ELOSS.background(config,'filename', 'detector', *args, **kwargs)
## *args = s1 -> The scan to be subtracted from all previous load/add/subtract actions
## *args = [s1, ..., sn] -> The sum of scans s1..sn to be subtracted from all previous load/add/subtract actions

## REQUIRED VARIABLES ##
## config = RIXS         -> RIXS Endstation
## config = RSXS         -> RSXS Endstation
## filename = hdf5 file  -> Extension .h5 not needed
## detector            -> sums all data from MCA type detector
## detector[Start:End] -> sums all MCA data within excitation energy range
## NOTE: Simple math allowed with xes_stream with contstants and variables, i.e. +, -, /, *

## **kwargs ##
## norm = True                          -> Scales the data such that its range is 0 to 1.
## twin_y = True                        -> Adds these plots to a secondary scale
## xoffset = [(S1,P1),...,(SN,PN)]      -> Adjusts x-axis scale to map SN to PN
## xcoffset = value                     -> Shifts x-axis scale by a constant value
## yoffset = [(S1,P1),...,(SN,PN)]      -> Adjusts y-axis scale to map SN to PN
## ycoffset = value                     -> Shifts y-axis scale by a constant value
## grid = [start,stop,delta]          -> Change x-axis grid to be uniform
## savgol = (wind len, poly ord, deru) -> Smooths and takes derivative
## binsize = bins                       -> Bins data bitwise, needs to be 2^N


## SET RANGE OF Y and X VALUES ##
ELOSS.xlim(min, max)
ELOSS.ylim(min, max)
## NOTE: These ranges will be preserved in the data export

## PLOTTING SCAN DATA ##
ELOSS.plot(**kwargs)

## **kwargs ##
## title = 'New Title of plot' -> Replaces default title with user defined
## xlabel = 'x-axis label'     -> Replaces default x-axis label with user defined
## ylabel = 'y-axis label'     -> Replaces default y-axis label with user defined
## plot_height = value         -> The plot height in points, default is 600
## plot_width = value          -> The plot width in points, default is 900
## norm = True                 -> Normalizes all the data between 0 and 1
## waterfall = offset          -> Normalizes as above and shifts each by the offset

## EXPORTING PLOT DATA ##
ELOSS.export('filename', **kwargs)

## REQUIRED VARIABLES ##
## filename = filename to be used for ASCII file, do not add extension
## NOTE: Data is exported as it displayed, only options in plotting methods are ignored.

## **kwargs ##
## split_files = True -> Saves each data stream with number appended to the filename
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```
## Load various resonant hBN and Elastic Scatter Spectra
ELOSS = ELOSSLoader()
ELOSS.load(RIXS,'HDF5_Notebook', 'XES', 17,18,19,20,21, yoffset = [(369.438, 370), (379.375, 380), (389.210, 390), (398.932,
ELOSS.load(RIXS,'HDF5_Notebook', 'XES[390:400]', 25,26, yoffset = [(369.438, 370), (379.393, 380), (389.210, 390), (398.932,
ELOSS.xlim(-5, 20)
ELOSS.plot(norm = True)
ELOSS.export('ELOSS1')
```