Description of the code's functionality

The *Main_process_PFs* function describes the main stages of the PF processing routine:

Stage 1: data loading and pre-processing

Specify a folder with data and a folder for output files

If: the data folder contains files 'x.txt', 'z.txt' and 'y.txt'

then: load PF coordinates from those files

else: Load PF coordinates from all point and start.point DAT files located in the data folder

Delete empty columns, i.e. remove void PF tracings (if any)

Determine the number of non-zero coordinates (*maxk0*) for each PF

Orient PF to be in the 1st XOZ quadrant

Delete the first tracing point (the point used only for the purpose of MT wall vector determination in HOWFLARED IMOD program)

Update the number of points (*maxk0*) for each PF

Fill in tracing gaps by interpolation, using *InterpolateGappedTracings* function

Bring the first point to origin

Express PF coordinates in nm using user-supplied pix/nm parameter

Calculate PF lengths using *PF_lengths_sub* function

OPTIONAL: exclude PFs, which are shorter than a user-defined length

Display the number of PFs excluded from analysis

Stage 2: processing PF lengths

Plot a histogram of PF lengths

Save the histogram of PF lengths to as picture 'histlength.jpeg' and a table 'all_PF_lengths.txt',

Save the histogram data into a file 'hist_PF_length.txt'

Calculate the mean, standard deviation of PF lengths and save to a file 'MeanL_StdL_numL.txt'

Stage 3: smoothing and plotting PF traces

Plot all PFs

OPTIONAL: mark some PFs to identify poorly processed PF tracings (available only in 2D)

OPTIONAL: view individual PFs before smoothing

Apply smoothing, using *filter_PFs* function

Bring first point to origin as the smoothing process above can slightly shift it

Plot all PFs after smoothing

Stage 4: processing PF curvatures

Apply smoothing, using *filter_PFs* function

Calculate angles between each PF segment, defined by a pair of adjacent points, using *find_angles_sub* function

Pool all angles across all PFs

Plot a histogram of all angles

Save the histogram of all angles as a figure ‘angles.jpeg’ and a data table ‘all_angles.txt’

Save the histogram data into a file ‘hist_ang-all.txt’

Calculate the mean, median and standard deviation of the angles and save to a file ‘Ang-ALL_mean_med_SD_N.txt’

Apply smoothing, using *filter_PFs* function

Calculate angles between adjacent segments of along a PF, using *find_angles_sub* function

Specify the binning settings for the curvature vs. distance curve

Calculate mean curvature as a function of the distance from PF tip, using *find_angle_vs_position* function

Calculate the standard deviations of curvatures as a function of the distance from PF tip

Perform a weighted linear fit of the mean curvature vs. distance from PF tip

Plot the mean PF curvature as a function from PF tip, overlaid onto the linear fit.

Record the data into a file: ‘ang_vs_tip_fit.txt'

Calculate terminal PF curvatures

Record the data into a file: ‘term_angles.txt'