

class_name
attribute1 : <i>attr1_type</i> attribute2 : <i>attr2_type</i>
method1() method2()

# salford\_mic\_arc Class Diagram

*Red: functionality not implemented*

SingleFileTimeSeries
<div>filename : <i>str</i></div> <div>mic_channel_names : <i>list</i> other_channel_names : <i>list</i></div> <div>T : <i>float</i> fs : <i>int</i> fs2 : <i>int</i> t : (T*fs,) <i>array</i> t2 : (T*fs2,) <i>array</i></div> <div>N_ch : <i>int</i> mic_data : (N_ch, T*fs) <i>array</i></div> <div><i>other_channels : (N_ch, T*fs) array                   or (N_ch, T*fs2) array</i></div> <div><div>_read_mic_chs() _read_other_chs()</div><div>calc_channel_mean()</div><div>filter_data() estimate_peak_freq()</div><div>calc_PSDs() export_wavs()</div></div>

MultiFileTimeSeries
<div>filenames : list of <i>str</i> N_files : <i>int</i></div> <div>mic_channel_names : <i>list</i> other_channel_names : <i>list</i></div> <div>T : <i>float</i> fs : <i>int</i> fs2 : <i>int</i> t : (T*fs,) <i>array</i> t2 : (T*fs2,) <i>array</i></div> <div>N_ch : <i>int</i></div> <div>files : (N_files,) list of ‘SingleFileTimeSeries’</div> <div><div>filter_data()</div><div>calc_PSDs()</div><div>calc_channel_mean()</div></div>

SingleFilePSD
<div>filename : <i>str</i></div> <div>N_ch : <i>int</i> Noverlap : <i>int</i> window : <i>str</i> psd : (N_ch, Ndft//2+1) <i>array</i></div> <div>df : <i>float</i> fs : <i>int</i> Ndft : <i>int</i> freq : (Ndft//2+1,) <i>array</i></div> <div>psd_broadband : (N_ch, Ndft//2+1) <i>array</i></div> <div>peak_indices : (N_ch, N_peaks) <i>array</i> peak_lims : (N_ch, N_peaks, 2) <i>array</i></div> <div>overall_SPL : (N_ch,) <i>array</i> broadband_SPL : (N_ch,) <i>array</i></div> <div>peaks_SPL : (N_ch, N_peaks) <i>array</i> tonal_SPL : (N_ch,) <i>array</i></div> <div><div>calc_broadband_PSD()</div><div>calc_overall_SPL() calc_broadband_SPL()</div><div>find_peaks() _find_peak_lims()</div><div>calc_tonal_SPL() _calc_peaks_SPL()</div></div>

MultiFilePSD
<div>filenames : <i>list</i> N_files : <i>int</i></div> <div>Ndft : <i>int</i> Noverlap : <i>int</i> window : <i>str</i></div> <div>psd: (N_files,) list of ‘SingleFilePSD’</div> <div>N_ch : <i>int</i> df : <i>float</i> fs : <i>int</i> freq : (Ndft//2+1,) <i>array</i></div> <div>broadband_SPL : (N_files, N_ch) <i>array</i> overall_SPL : (N_files, N_ch) <i>array</i></div> <div>peak_indices : (N_files, N_ch, N_peaks) <i>array</i> peak_lims : (N_files, N_ch, N_peaks, 2) <i>array</i></div> <div>tonal_SPL : (N_azim, N_ch,)- <i>array</i></div> <div><div>calc_PSDs()</div><div>calc_overall_SPL() calc_broadband_SPL()</div><div>find_peaks() calc_peaks_SPL() calc_tonal_SPL()</div><div>SPL_to_polar()</div></div>

References on UML / Class Diagrams:

<https://www.visual-paradigm.com/guide/uml-unified-modeling-language/uml-class-diagram-tutorial/>

[https://www.tutorialspoint.com/uml/uml\\_class\\_diagram.htm](https://www.tutorialspoint.com/uml/uml_class_diagram.htm)

**TO DO:**

- class for rotating machinery
  - N\_blades, f\_shaft, BPF
  - recirculation\_test

- class for reading multiple files
  - enable filter\_data method (iterate over multiple DSRawTimeSeries?)

root namespace
P_REF : <i>float</i> DEFAULT_NDFT : <i>int</i> DEFAULT_NOVERLAP : <i>int</i> DEFAULT_WINDOW : <i>str</i>
<div>_calc_spectral_centroid()</div> <div>calc_ac_power()</div>

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