HELIOS

# Classes

Two main classes – **waveform** and **experiment** – form the core of the HELIOS toolbox.

# Waveform

Objects of this class store the waveforms with their time samples and additional meta information.

To create a waveform object:

<**output**> **= waveform (data, time, data\_type, time\_units, data\_units, tag);**

data – the waveform vector or matrix;

time – the corresponding time sampling vector (optional);

data\_type – a string specifying the type of data (e.g. ‘raw’,’dff’) (optional);

time\_units – a string specifying units of time (‘us’, ‘ms’, ‘s’) (optional);

data\_units – a string specifying the units of data (e.g. ‘a.u.’) (optional);

W = waveform;

%fields

**data:** [1x100 double]

**data\_type:** ‘random’

**data\_units:** ‘a.u’

**time:** [1:100 double]

**time\_units:** ‘samples’

**Fs:** NaN

**tag**: {}

tag – a string with custom information (optional);

By default, only data input is required. If data is a matrix the time vector will represent all the rows in the data matrix. If even data is not provided the constructor will build a data of 100 random values.

Defaults:

Time – numbers of samples in the first data row;

Data\_type – NaN

Time\_units – NaN

Data\_units – NaN

Fs – NaN

Tag – {} empty cell

Fs is the sampling frequency and in case the time units are specified as ‘us’ (microseconds), ‘ms’ or ‘s’ it will be calculated automatically.

There are several methods currently available to use on waveform objects.

## Waveform methods

dff, plot, store,

# Experiment