earthquakepy

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USAGE

1.1 Installation

earthquakepy can be installed using pip. It's an absolute breeze. Try it!

```
$ pip install earthquakepy
```

Thats it! This will install the earthquakepy and other required libraries. Wasn't that easy?

1.2 Import

Probably you know how to import the library. Let me just remind you.

```
import earthquakepy as ep
```

Although the library can be imported as anything, we will use `ep` for the same.

1.3 Core functions

Following are the functions available in the library. Do note that several other functions/modules exists in the library inside various classes and those are not included here.

earthquakepy.**read_peer_nga_file**(*filename*)
Reads a PEER-NGA west2 database record from a file given by filename.

Parameters **filename** (*str*) – filename of the record file.

Returns TimeSeries object

Return type earthquakepy.timeseries.Timeseries

earthquakepy.**read_raw_file**(*filename*, ***kwargs*)
Reads the data from a raw file with first column as time axis and second column as ordinates. This function is a wrapper around numpy.genfromtxt and accepts all of its arguments.

Parameters

- **filename** (*str*) – filename of the raw data file.
- ****kwargs** – Optional arguments to be passed to numpy.genfromtxt

Returns TimeSeries object

Return type earthquakepy.timeseries.TimeSeries

earthquakepy.**sdof**(*m=None*, *c=0.0*, *k=None*, *xi=0.0*, *wn=None*, *T=None*)

Creates a SDOF system object from the parameters provided. User should provide the set of parameters appropriately.

Parameters

- **m** (*float or None*) – mass of the system.
- **c** (*float*) – damping constant of the system.
- **k** (*float or None*) – stiffness of the system.
- **xi** (*float*) – damping ratio of the system.
- **wn** (*float or None*) – natural frequency of the system.
- **T** (*float or None*) – Period of the system.

Returns Sdof object

Return type earthquakepy.singledof.Sdof

earthquakepy.**mdof**(*M=None*, *C=None*, *K=None*)

Creates a MDOF system object from the parameters provided.

Parameters

- **M** (*2-D array*) – Mass matrix
- **C** (*2-D array*) – Damping matrix
- **K** (*2-D array*) – STiffness matrix

Returns Mdof object

Return type earthquakepy.multidof.Mdof

earthquakepy.**read_ops_json_model**(*filename*)

Reads a json model file generated by OpenSees using

```
print -JSON -file filename
```

Parameters **filename** (*str*) – json file filename

Returns OpenSeesModel object

Return type earthquakepy.opensees_classes.OpenSeesModel

earthquakepy.**read_ops_node_output**(*filename*, *ncomps*[, *nodeTags=[]*, *compNames=[]*], ***kwargs*)

Reads node output file generated by opensees node recorder command.

Parameters

- **filename** (*str*) – Node output file name
- **ncomps** (*int*) – Number of components per node
- **nodeTags** (*1-D array or list*) – Optional, list of node tags to be used. Default: [1, 2, …., n]
- **compNames** (*1-D array or list*) – Optional, list of component names. Default: [“0”, “1”, “2”]

Returns OpenSeesNodeOutput object

Return type earthquakepy.opensees_helper.OpenSeesNodeOutput

earthquakepy.**read_ops_element_output**(*filename*, *ncomps*[, *nodeTags=[]*, *compNames=[]*], ***kwargs*)

Reads node output file generated by opensees element recorder command.

Parameters

- **filename** (*str*) – Element output file name
- **ncomps** (*int*) – Number of components per element
- **elmTags** (*1-D array or list*) – Optional, list of element tags to be used. Default: [1, 2, …., n]
- **compNames** (*1-D array or list*) – Optional, list of component names. Default: [“0”, “1”, “2”]

Returns OpenSeesNodeOutput object

Return type earthquakepy.opensees_helper.OpenSeesNodeOutput

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EARTHQUAKEPY

A python library for earthquake engineers.

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