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# **Fusion Data Framework Documentation**

***Release 0.0.0***

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Fusion Data Framework (FDF) is a data access, management, and visualization framework for magnetic fusion experiments.

Repository: <https://github.com/Fusion-Data-Framework/fdf>

Documentation: [PDF](#)

## ABOUT FDF

Fusion Data Framework (FDF) is a data access, management, and visualization framework for magnetic fusion experiments.

Repository: <https://github.com/Fusion-Data-Framework/fdf>

Documentation: [HTML](#) or [PDF](#)

Submit bugs or feature requests: <https://github.com/Fusion-Data-Framework/fdf/issues>

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To contribute to the FDF project, please contact John, David, Kevin, or Howard.

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CHAPTER  
**TWO**

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**USER GUIDE**

## MODULES AND CLASSES

### 3.1 Module factory.py

Root module for the FDF package.

#### Classes

- Machine - root class for the FDF package
- Shot - shot container class
- Logbook - logbook connection class
- Container - diagnostic container class
- Node - mdsplus signal node class
- FdfError - error class for FDF package

#### Usage:

```
>>> import fdf
>>> nstx = fdf.Machine('nstx')
>>> nstx.s140000.logbook()
>>> nstx.addshots(xp=1048)
>>> nstx.s140000.mpts.plot()
```

#### 3.1.1 Class Machine

**class** factory.**Machine** (*name='nstx', shotlist=[], xp=[], date=[]*)

Factory root class that contains shot objects and MDS access methods.

Basic class initialization is performed as follows: >>>nstx = Machine(name='nstx')

the Machine class contains a model shot object: nstx.s0

shot data can be accessed directly through the Machine class: >>> nstx.s141398 >>> nstx.s141399

alternatively, a list of shot #'s may be provided during initialization: >>>nstx = Machine(name='nstx', shotlist=[141398, 141399])

or added later using the addshot method: >>>nstx.addshot([141398, 141399])

#### 3.1.2 Class Shot

**class** factory.**Shot** (*shot, root=None, parent=None*)

### 3.1.3 Class Logbook

```
class factory.Logbook (name='nstx', root=None)
```

## 3.2 Module fdf\_signal.py

fdf-signals.py - module containing Signal class

### 3.2.1 Classes

- Signal - signal class for data objects

Created on Tue Jun 23 2015

@author: hyuh

### 3.2.2 Class Signal

```
class fdf_signal.Signal (**kwargs)
    sig=fdf.Signal(signal_ndarray, units='m/s', axes=['radius','time'], axes_values=[ax1_1Darray, ax2_1Darray],
    axes_units=['s','cm'])

    e.g.:      mds.Signal(np.arange((20*10)).reshape((10,20)),      units='keV',      axes=['radius','time'],
    axes_values=[100+np.arange(10)*5, np.arange(20)*0.1], axes_units=['s','cm'])

    or an empty signal:  s=mds.Signal() default axes order=[time, space] sig=fdf.Signal(units='m/s',
    axes=['radius','time'], axes_values=[radiusSignal, timeSignal])
```

## 3.3 Module fdf\_globals.py

fdf\_globals.py contains package-level constants

Created on Thu Jun 18 11:18:16 2015

@author: ktritz



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