
InSet Documentation

Release 1

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This website provides the documentation for the usage and extension of the INstrumentSETtings beam instrumentation toolbox
This is not in the above paragraph?

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1.1 Beam

This module defines the beam class using the python datatype dictionary of the following form

The module takes the following arguments

Property — Key — Value Type — Remarks

Particle type — `par_type` — String — Ion type (p, U, Ar etc.)

Charge state — `charge_state` — Integer — Charge state

Atomic mass — `atomic_mass` — Integer — 2 for Hydrogen

Particle number — `par_num` — Integer — Total number of particles (ions)

Distribution type — `d_type` — String — a for arbitrary, p for parabolic, g for gaussian and kv for KV distribution

X Distribution — `x_dist` — List of integers for 'a', two Ints for parabolic and gaussian — Phase space distribution in x plane

Y Distribution — `y_dist` — Same as X Dist. — Phase space distribution in y plane

Z Distribution — `z_dist` — Same as X Dist. — Phase space distribution in z/s plane

class `beam.beam` (*par_type=None, charge_state=None, atomic_mass=None, par_num=10000000*)
Beam class defines the beam object

It creates a beam object instance the parameters in a special order are specified, or simply by passing a beam dictionary

A save keyword 's' can be used to save the beam object in a file, which can be loaded later

save ()

This function will save the beam object to an external file

`beam.beam_initiate` ()

This function starts on importing the module

`beam.beam_structure` ()

This function defines the structure of the beam

1.2 Indices and tables

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1.3 Machine

This module defines the beam object

The module takes the following arguments

Property — Key — Value type — Description

Circumference — `circumference` — Float — Circumference of the machine

Compaction factor — `com_fact` — Float — Momentum compaction factor

Set tune — `set_tune` — List of Float — Horizontal and vertical tune

Set Chromaticity — `set_chro` — List of float — Horizontal and vertical chromaticity

class `machine.machine` (*circumference=216.2, com_fact=0.2, injection_energy=11400000.0*)

The machine class defines all the machine parameters

1.3.1 Indices and tables

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1.4 Device Modules

Each Diagnostic sensor description and settings are documented here.

1.4.1 Current Transformers

Generic Transformer object Generic Trafo module takes beam and machine object and returns the TrafoOut

The module takes the following arguments

Beam — Beam object fully specifying the beam

Machine — Accelerator setting object

TrafoType (Optional) — Specific transformer types to define exact Trafo behaviour

1.4.2 Add functions from Python library

```
io.open()
```

1.4.3 Indices and tables

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1.5 Common Modules

The common modules consist of electronics, optics systems cables etc. They are described and documented here.

1.5.1 Amplifiers and Attenuators

Generic amplifier and attenuator definition Generic Amplifier Module

The module takes the following arguments

Amplification — The amplification/attenuation in (dB)

Noise figure — Accelerator setting object

Input Noise — When the input is open or terminated (in nV/sqrt(Hz))

AmplifierType (Optional) — Specific amplifier implementation

1.5.2 Lenses

1.5.3 Indices and tables

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BIBLIOGRAPHY

[SPHINXDOC] This is Sphinx doc documentation -> <http://sphinx-doc.org/latest/tutorial.html>.

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