
sigma0 Documentation

Release 0.0.1

TU Wien

May 01, 2020

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This is the documentation of **sigma0**.

1.1 License

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1.2 Contributors

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1.3 Changelog

1.3.1 Version 0.0.1

- First release
- Update pyscaffold v3.2.3

1.4 sigma0

1.4.1 sigma0 package

Submodules

sigma0.oh_model module

sigma0.oh_model.**gammah**(*eps*, *theta*)

Incoherent reflectivity for H-pol.

Parameters

- **eps** (*complex number*) – Complex dielectric constant.
- **theta** (*float*) – Angle in degrees.

Returns **gammah** – Incoherent reflectivity for H-pol.

Return type *float*

sigma0.oh_model.**gammav**(*eps*, *theta*)

Incoherent reflectivity for V-pol.

Parameters

- **eps** (*complex number*) – Complex dielectric constant.
- **theta** (*float*) – Angle in degrees.

Returns **gammav** – Incoherent reflectivity for V-pol.

Return type *float*

sigma0.oh_model.**sigma0_bare**(*theta*, *eps_low*, *f_rms*, *f*, *eps_top=1*)

Oh et.al. (1992) surface backscatter calculations

This functions calculations surface backscatter using the Oh et al. (1992) surface model.

References Oh et al., 1992, An empirical model and an inversion technique for rader scattering from bare soil surfaces. IEEE Trans. Geos. Rem., 30, pp. 370-380

Parameters

- **theta** (*float*) – incidence angle in degrees
- **eps_low** (*complex number*) – complex permittivity of lower medium
- **f** (*float*) – frequency in hertz
- **f_rms** (*float*) – fractional rms height. rms_height in meters divided by wavelength

- **eps_top** (*complex number, optional*) – complex permittivity of upper(incoming) medium

Returns **sigma0** – Surface backscatter.

Return type `float`

sigma0.skeleton module

This is a skeleton file that can serve as a starting point for a Python console script. To run this script uncomment the following line in the entry_points section in setup.py:

```
[console_scripts] fibonacci = sigma0.skeleton:run
```

Then run *python setup.py install* which will install the command *fibonacci* inside your current environment. Besides console scripts, the header (i.e. until `_logger...`) of this file can also be used as template for Python modules.

Note: This skeleton file can be safely removed if not needed!

`sigma0.skeleton.fib(n)`

Fibonacci example function

Parameters **n** (*int*) – integer

Returns n-th Fibonacci number

Return type `int`

`sigma0.skeleton.main(args)`

Main entry point allowing external calls

Parameters **args** (*[str]*) – command line parameter list

`sigma0.skeleton.parse_args(args)`

Parse command line parameters

Parameters **args** (*[str]*) – command line parameters as list of strings

Returns command line parameters namespace

Return type `argparse.Namespace`

`sigma0.skeleton.run()`

Entry point for console_scripts

`sigma0.skeleton.setup_logging(loglevel)`

Setup basic logging

Parameters **loglevel** (*int*) – minimum loglevel for emitting messages

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