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PyECLLOUD

Short description

PyECLLOUD is a 2D macro-particle code for the simulation of electron cloud effects in particle accelerators. It can be used for two purposes:

- in stand-alone mode for the simulation of the e-cloud buildup at a certain section of an accelerator (in this case the beam is rigid and feels no effect from the cloud);
- in combination with the PyHEADTAIL code for the simulation of the e-cloud effects on the beam dynamics.

Web resources

- **Source code:** <https://github.com/PyCOMPLETE/PyECLLOUD>
- **Wiki pages:** <https://github.com/PyCOMPLETE/PyECLLOUD/wiki>

Technical information

- **Programming Languages used for implementation:**
 - ◆ Mainly Python.
 - ◆ Computationally intensive routines are implemented in FORTRAN (and linked via f2py) or C (and linked via cython).
- **Parallelization strategy:**
 - ◆ PyECLLOUD-PyHEADTAIL simulations can be paralleled using the PyPARIS layer.
- **Operating systems:**
 - ◆ tested exclusively on Linux (experience on Ubuntu 12.04 or more recent, and SLC 5 or more recent)
- **Other prerequisites:**
 - ◆ Python 2.7+ (never tested on Python 3)
 - ◆ Libraries: numpy, scipy

Other information

- **Developed by:** Giovanni Iadarola
- **License:** CERN Copyright
- **Contact persons:** Giovanni Iadarola, Giovanni Rumolo
- **Being actively developed and supported:** Yes

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