

FCC-EE OPTICS REPOSITORY

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FCC-ee (optics) repository

- Motivation and plans presented by Ghislain in WP2 workshop and 134th FCC-ee optics meeting
 - Common place to keep information/data on evolution of FCC-ee design for current and future developers/user
- Repository was moved to acc-models
 - Provides infrastructure for deploying to eos/afs and generating website
 - Triggered also a change of file structure
- Please have a look at the new website, repository, and the released versions on zenodo

What can repository do for you?

- Provide easy access to information/data via website, gitlab, afs, eos
 - Reasonably simple way to contribute too
- Easy reference to specific lattice version
 - Following major changes, state of the repository tagged with a version number
 - Each version is released on zenodo, and can be cited with a DOI
- With every change, several scripts are triggered
 - Basic consistency checks (tunes, β^* , emittance, DA, ..) so far, but more complex workflows possible
 - Not only to document jobs, but also to free resources
- For any other requests/ideas/issues, email FCC.Optics@cern.ch

Structure

- Few protected branches holding the up-to-date reference version
 - V22: released in 2022, based on 91km circumference layout
 - V18: released in 2018, previous 217 version
- Following major changes, branch will be tagged with a version number
 - Convention $VYY.idx$, with YY the year of the first release, and idx a running index
 - Releases include lattices/optics, and parameter set
- Three entry points:
 - Quick access to parameters, lattices, optics plot, and examples via website
 - Development and full data through gitlab, with repository mirrored to afs/eos
 - Tagged versions with DOI on Zenodo

Website

Future Circ

- FCC
 - General
 - FCC-ee
 - Overview
 - Documentation
 - V22
 - V18

FCC

- General
- FCC-ee
 - Overview
 - Documentation
 - V22
 - Parameter
 - Z
 - T
 - V18

FCC-ee collider lattice version V22

Data table

The following table contains the following parameters:

Energy [GeV]
ϵ_z [m]
ϵ_y [m]
ϵ_y/ϵ_z
N_{bunches}
Bunch population
Beam current [mA]
Momentum compaction
Q_x
Q_y
β_z^* [m]
β_y^* [m]

z - Z operation mode, 45.6 GeV

Twiss functions

The Twiss functions of this operation mode are shown in the interactive plot below. You can zoom in or hover over any curve to obtain more information about the function's value at a specific element. Below the plot, the Twiss table can be downloaded as TFS file. Due to the large number of elements in FCC-ee, the loading of the plots may take a minute.

Repository

- Directory tree similar to LHC and FCC-hh
 - More details in the *README*
 - Some directories like *errors* to come
- *reference_parameter.json* to contain beam parameter, such as energy, ϵ_x , ..
- *Changelog.md* to keep track of changes between versions

acc-models > acc-models-fcc > FCC-ee-lattice

FCC-ee-lattice
Project ID: 129355

76 Commits 4 Branches 0 Tags 3.3 MB Files 4.5 GB Storage

V22 fcc-ee-lattice / +

History Find file Web IDE Clone

Merge branch 'V22_fix_publish' into 'V22' ✓ 4bd8f668
Michael Hofer authored 19 hours ago

README CHANGELOG CI/CD configuration No license. All rights reserved Add Kubernetes cluster

Configure Integrations

Name	Last commit	Last update
aperture	V22 new sequence and emittance check	1 week ago
examples	V22 new sequence and emittance check	1 week ago
lattices	V22 new sequence and emittance check	1 week ago
tests	V22 new sequence and emittance check	1 week ago
toolkit	simplify tcsn, add trackmacros and DA exam...	3 weeks ago
web	add zoom undo	1 week ago
.gitattributes	filled structure and add tests	1 month ago
.gitignore	update gitignore	3 weeks ago
.gitlab-ci.yml	fix public moving in public	19 hours ago
.zenodo.json	filled structure and add tests	1 month ago
CHANGELOG.md	V22 new sequence and emittance check	1 week ago
README.md	add zoom undo	1 week ago
python_requirements.txt	V22 new sequence and emittance check	1 week ago
reference_parameters.json	change table, add sequence, madx scripts	1 week ago

README.md

FCC-ee optics repository

The FCC-ee optics and data repository holds data and optics files for a number of beam dynamics studies under way to design the FCC-ee collider.

Zenodo

March 10, 2022 Dataset [Open Access](#)

FCC-ee lattice

FCC-Collaboration
Repository containing the FCC-ee lattices.

Preview

V18.1.zip

- .gitattributes 129 Bytes
- .gitignore 140 Bytes
- CHANGELOG.md 217 Bytes
- README.md 3.9 kB
- aperture
 - FCCee_aper_definitions.madx 48.6 kB
 - README.md 334 Bytes
 - install_synchrotron_rad_masks.madx 9.5 kB
- examples
 - check_da.madx 1.8 kB
 - check_da_t.sad 1.4 kB
 - check_optics_t.sad 731 Bytes
 - fcc_ee_t.madx 5.0 kB
- lattices
 - h
 - fccee_h.sad 222.1 kB
 - fccee_h.seq 372.7 kB
 - t

Files (593.9 kB)

Name	Size	
V18.1.zip	593.9 kB	Preview Download
md5:04e70c227e539f85f2d8ccfa02b9b0cd		

0 Citations

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New version

0

views

0

downloads

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Indexed in

Publication date:
March 10, 2022

DOI:
[DOI: 10.5281/zenodo.6344457](https://doi.org/10.5281/zenodo.6344457)

Grants:
[European Commission](#)

- FCCIS - Future Circular Collider Innovation Study (951754)

Related identifiers:
Compiled by
<https://gitlab.cern.ch/acc-models/fcc/fcc-ee-lattice>

Identical to
<https://gitlab.cern.ch/acc-models/fcc/fcc-ee-lattice/-/tree/V18.1>

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Versions

Version V18.1	Mar 10, 2022
10.5281/zenodo.6344457	

Cite all versions? You can cite all versions by using the DOI [10.5281/zenodo.6344456](https://doi.org/10.5281/zenodo.6344456). This DOI represents all versions, and will always resolve to the latest one. [Read more.](#)

Share

Cite as

FCC-Collaboration. (2022). FCC-ee lattice (V18.1) [Data set]. Zenodo.
<https://doi.org/10.5281/zenodo.6344457>

Start typing a citation style...

Export

BibTeX CSL DataCite Dublin Core DCAT
JSON JSON-LD GeoJSON MARCXML
[Mendeley](#)

Open points

- Convention on which beam goes in which direction
 - CERN convention seems to be that e^+ going in clockwise direction
- Ideally, move away from monolithic sequence files
 - Provide beam 2 sequence, tapered sequences, standard set of macros, etc.
- Where possible, add (more) references and tests

Thank you for your attention (& feedback)!