touscheklib

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CONTENTS:

touscheklib is a lightweight script to calcluate the Touschek-lifetime of a given accelerator lattice, based on Piwinski's 1998 paper[1], cpymad and mpmath.

Latest version: 0.8.0

[1] A. Piwinski: "THE TOUSCHEK EFFECT IN STRONG FOCUSING STORAGE RINGS", DESY 98-179 (1998).

CHAPTER

ONE

OPTICS TOOLS

CHAPTER

TWO

TOUSCHEK-LIFETIME FUNCTIONS

CHAPTER

THREE

PLOTTING

touscheklib.plotting.**plot_survey**(*madx*, *kmin=None*, *kmax=None*, *figsize=(12, 12)*, *s=3*, *aspect=True*)

Plot survey of machine elements utilizing MAD-X survey command.

Parameters

- **kmin** (*int, optional*) – Start index of the survey elements to be plotted.
- **kmax** (*int, optional*) – End index of the survey elements to be plotted.
- **figsize** (*tuple, optional*) – The size of the figure.
- **s** (*int, optional*) – Dotsize of label points.
- **aspect** (*bool, optional*) – If True, create plot having the same aspect ratio in both directions.

touscheklib.plotting.**plot_touschek_losses**(*optics*, *touschek_results*, *xlim='auto'*, *ylim='auto'*, *with_beta=False*, *figsize=(16, 4)*)

Plot the losses due to Touschek-scattering along the machine.

Parameters

- **optics** – An instance of optics class.
- **touschek_results** (*dict*) – The output of *touschek.lifetime*.
- **xlim** (*list or str, optional*) – Either a tuple [x0, x1] to display the results only from x0 to x1 or str == 'auto', in which we display the results according to the underlying symmetry used.
- **with_beta** (*bool, optional*) – If True, also show 1/(betax*betay) as indication of the locations with largest losses.
- **figsize** (*tuple, optional*) – The size of the figure.

CHAPTER

FOUR

INDICES AND TABLES

- genindex
- modindex
- search

PYTHON MODULE INDEX

t

INDEX