**Command-line tools**

These are Python scripts based on the Synergia and CHEF libraries. While the user can link his own C++ code to these libraries, add his own analysis code and run it, it might be more convenient to use our existing scripts.

**synergia**

The synergia script is really just a frontend to Python. It is use for instance to convert MAD file to a Synergia lattice file used in a C++ code. Evidently, it can also be used to drive a complet Synergia simulation.

usage: synergia <synergia\_script> [arguments]

–help for help

-i for interactive mode

—ipython for interactive mode with ipython

**synbeamplot**

Plots one- and two-dimensional density projections of a beam.

usage: synbeamplot <filename> [option1] ... [optionn] <h coord> <v coord>

available options are:

–nohist : do not show histograms (not on by default)

—bins=<num> : number of bins in each direction

–output=<file> : save output to file (not on by default)

—show : show plots on screen (on by default unless –output flag is present

available coords are:

x xp y yp z zp

**syndiagplot**

Plots one- or two-dimensional diagnostics vs trajectory length. Multiple plots can be performed at once.

usage: syndiagplot <filename> [option1] ... [optionn] <plot1> ... <plotn>

available options are:

–oneplot : put all plots on the same axis (not on by default)

—output=<file> : save output to file (not on by default)

–show : show plots on screen (on by default unless –output flag is present

available plots are:

x\_emit x\_mean x\_std x\_xp\_corr x\_xp\_mom2 x\_y\_corr x\_y\_mom2 x\_yp\_corr x\_yp\_mom2 x\_z\_corr x\_z\_mom2 x\_zp\_corr x\_zp\_mom2 xp\_mean xp\_std xp\_y\_corr xp\_y\_mom2 xp\_yp\_corr xp\_yp\_mom2 xp\_z\_corr xp\_z\_mom2 xp\_zp\_corr xp\_zp\_mom2 xy\_emit xyz\_emit y\_emit y\_mean y\_std y\_yp\_corr y\_yp\_mom2 y\_z\_corr y\_z\_mom2 y\_zp\_corr y\_zp\_mom2 yp\_mean yp\_std yp\_z\_corr yp\_z\_mom2 yp\_zp\_corr yp\_zp\_mom2 z\_emit z\_mean z\_std z\_zp\_corr z\_zp\_mom2 zp\_mean zp\_std

**syntrackplot**

Plots particle tracks.

usage: syntrackplot <filename> [option1] ... [optionn] <h coord1> <v coord1> ... <h coordn> <v coordn>

available options are:

–oneplot : put all plots on the same axis (not on by default)

—output=<file> : save output to file (not on by default)

–show : show plots on screen (on by default unless –output flag is present

available coords are:

x xp y yp z zp

**synpoincareplot**

Performs Poincare plots of pairs of phase-space coordinates.

usage: synpoincareplot <filename1> ... <filenamen> [option1] ... [optionn] <h coord> <v coord>

available options are:

–pointsize=<float>: size of plotted points (default=4.0)

—output=<file> : save output to file (not on by default)

–show : show plots on screen (on by default unless –output flag is present

available coords are:

x xp y yp z zp

**syninspecth5**

Inspects HDF5 files.

usage:

syninspecth5 <hdf5\_file>

to list members, or

syninspecth5 <hdf5\_file> <member>

to display member

**synmad8toxml**

Converts Mad8 lattice files to Synergia XML files.

usage: synmad8toxml <mad8 file> <line name> <xml file>

Reads line <line name> from <mad8 file> and writes to <xml file>.