kafeQuickStart Documentation

Release 1.0

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March 19, 2016

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Brief descritpion for the impatient: how to install kafe

CHAPTER

ONE

WHAT IS KAFE ?

kafe (for Karlsruhe Fit Environment) is a data fitting framework designed for use in undergraduate physics lab courses. It is open-source software licensed under the GNU Public License.

kafe provides a basic Python toolkit for fitting models to data as well as for visualizing the fit result. It relies on Python packages such as *NumPy* and *matplotlib*, and uses the Python interface to the minimizer *MINUIT* contained in CERN's data analysis framework ROOT, or to *iminuit*, which is available as a separate Python package.

The software originated as part of a bachelor's thesis in physics *Institut für Experimentelle Kernphysik* (IEKP) at the *Karlsruhe Insitute of Technology* (KIT).

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1.1 Requirements

kafe relys on some additional Python packages. The recommended versions of these are as follows, numbers in parentheses refer to the minimum requirements:

- SciPy >= 0.12.0 (0.9.0)
- NumPy >= 1.7.1 (1.6.1)
- matplotlib >= 1.5.0 (1.3.0)
- **function minimizer, either**
  - *MINUIT* from included in *CERN*'s data analysis package ROOT (>= 5.34) or
  - stand-alone package iminuit (>= 1.1.1)
- Qt4 (>= 4.8.5) and the Python bindings PyQt4 (>= 3.18.1)
- A *LaTeX* distribution (tested with TeX Live). *LaTeX* is used by matplotlib for typesetting labels and mathematical expressions.
- dvipng for converting DVI files to PNG graphics

1.2 How to obtain and install?

kafe is available on github

After installation of the required Python packages (see above), the easiest way of installation under a running Python 2.7.x, on Linux, Windows(10) or Mac OSX is via the *pip* installer:

```
pip install kafe
```

Testing is best done by downloding the directory *examples* from *github* and running the examples provided. They are all described in the documentation also provided on *github* (see file *kafe.pdf* <*http://www.github.com/dsavoiu/kafe/doc/latex/kafe.pdf*>).