SK-Ana: Spectro-Kinetic matrices Analysis

P. Pernot

(2020-09-01)

Contents

Introduction

The `SK-Ana` graphical interface is organized in sequential order of project management:

- `Project`: define a project's name and load the data
- `Data Selection`: define the data subset to be treated
- `SVD`: perform Singular Values Decomposition analysis
- `ALS`: perform Alternated Least-Squares decomposition
- `Kinet`: constrain the analysis by a kinetic model
- `Downloads`: download saved the results and/or a report
- `About`: information about the code

Workflow

A typical workflow consists in the sequence:

`` `Project` > (`Data Selection` > `SVD` > `ALS`) > `Downloads` ``

where the sequence between parentheses is iterated until *satisfecit*. Practically, the `SVD` step could be avoided for an ALS analysis, but it provides a lot of useful information and should not be overlooked.

Modules reference

Project

Project definition and data input.

`New Project`

- **`Project Name`**: choose a name. If not, a name will be generated from the datafiles selected below.
- **`Predefined File Formats`**: a few data file formats have been predefined from the datafiles of different experiments. Choose the one corresponding to your data. For fine tuning, select 'Other...' which will open a new panel.

	Header	Separator	Decimal	Data structure
CSV	FALSE	','	'.'	wxd
ELYSE	FALSE	'\t'	'.'	wxd
Fluo	FALSE	';'	'.'	wxd
Streak	TRUE	','	'.'	wxd

  - `Header`: does the first line contain column headers ?
  - `Separator`: symbol used to separate the columns
  - `Decimal`: character used in the file for decimal points
  - `Data structure`:
    - `wxd`: wavelength in columns; delays in lines
    - `dxw`: delays in columns; wavelengths in lines
- **`Load-time compression factors`**: the data can be averaged by blocks at load time to save processing time and reduce noise.
  - `Delay` width (in pixels) of the block in delay dimension
  - `Wavl` width (in pixels) of the block in wavelength dimension
- **`Select data file(s)`**: select one or several files to be analyzed. Selecting the files will create new items in the right panel:
  - a success message '**Data Loaded !**'
  - an active table with a description of the file(s). When several files have been loaded:
    - it is possible to use the table to select a subset or to reorder them.

        * a menu appears with processing options:
            - `Average`: average the selected files
            - `Tile Wavl`: assemble the matrices in the wavelength dimension
            - `Tile Delay` (default): assemble the matrices in the delay dimension. In this case, the delay coordinate is replaced by an index.
            - press on `Do It!` to process the data
    - a summary of the processed matrix
    - a vignette of the processed matrix

- `Post-process compression factor`: the block averaging is performed *after* the data files are assembled.

`Open` and `Save`

These are placeholders. The functionalities are not active.

Data Selection

SVD

ALS

Kinet

Downloads

About