FissionGraphed v1.0.8
User Guide

Tymoteusz Mastalerz*

2025

Contents

1 Overview 2

2 Installation and Setup 2

3 Deinstallation process 2

4 Interface Overview 3

5 Getting Started 3

6 Data Visualisation Features 4

7 Advanced Functions 4

8 Menu Reference 4

9 Troubleshooting 5

10 Technical Specifications 5

*kamilomat12@gmail.com

1 Overview

FissionGraphed is a scientific visualisation tool that produces interactive scatter plots for nuclear fission data. Primary goals:

- display relationships between fragment and compound–nucleus observables,
- allow quick filtering by publication or atomic number,
- export graphics in PNG format.

2 Installation and Setup

System Requirements

- Operating System: Linux, Debian distribution derivatives if using .deb package variant, any distribution of Linux when using .AppImage variant.
- Python or any other coding language/library is not required.

.deb package variant (Debian derivative distributions)

Installation

In order to install the program run command: "sudo dpkg -i ./[package].deb" in terminal while in the same directory as the `.deb` package.
Alternatively you can run command: "sudo apt install ./[package].deb" in terminal while in the same directory as the `.deb` package.

Running

After installation the application can be found by searching "FissionGraphed" on the App Grid.

.AppImage variant (non-Debian distributions)

Installation

In order to use the program you just need to download the `.AppImage` file.

Running

After downloading, go to the file's directory and run it, note, that it won't be present on the App Grid.

3 Deinstallation process

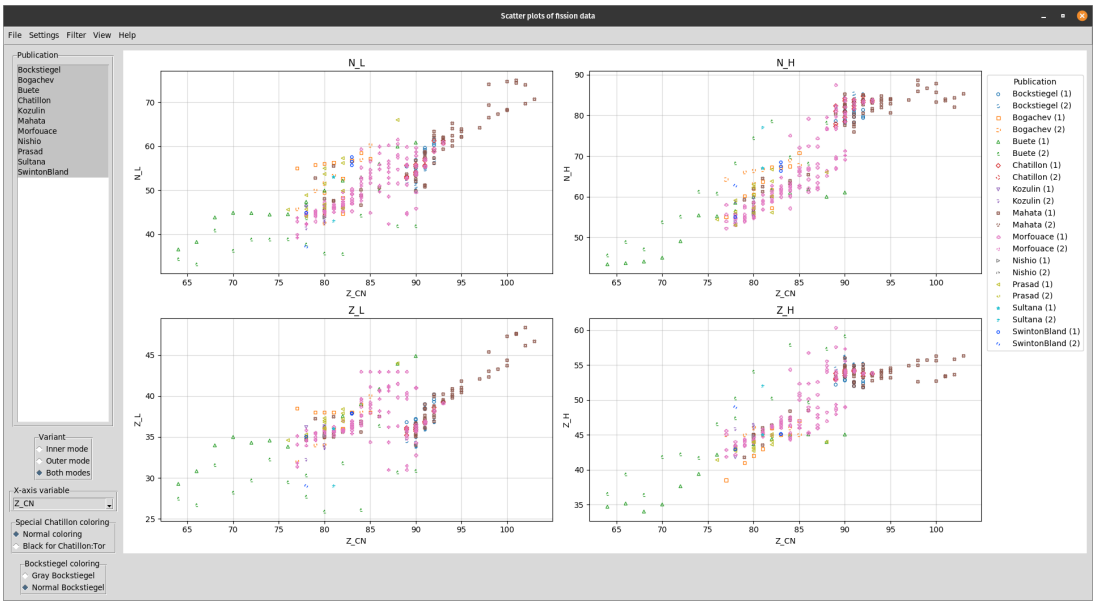
.deb package variant (Debian derivative distributions)

In order to uninstall the program you need to run: "sudo apt remove fissiongraphed" in terminal, then go to `/opt` and remove "fissiongraphed" folder with all it's contents.

.AppImage variant (non-Debian distributions)

In order to uninstall the program you need to delete the `.AppImage` file.

4 Interface Overview



Plot Area Four synchronised scatter plots (N_L, N_H, Z_L, Z_H).

Control Panel Located left; contains publication selector, variant options, axis choice, colour settings and special filters.

Menu Bar File, Settings, Filter, View and Help menus for additional actions.

5 Getting Started

1. **Select Publications**: Use the multi–select listbox to choose one or more studies. Hold `Ctrl` for additive or subtractive selection.
2. **Choose Variant**:
   - *Inner mode* (`1`) — to only show inner mode (always present).
   - *Outer mode* (`2`) — to only show outer mode of fission graph, (shows inner mode for instances with only one mode).
   - *Both modes* — shows both fit modes, inner mode points have solid outline, outer mode points have dashed outlines.
3. **Set X–Axis**: Pick one of six variables; all four subplots update simultaneously.
4. **Customise Appearance**:
   - *View* → *Color by* Z_{CN} for per–element colouring.
   - *View* → *Filled Markers* for filled or hollow symbols.
   - *Special Chatillon/Bockstiegel* frames for unique styling rules.
5. **Export Plot**: *File* → *Save plot...* to save a PNG (300 dpi). Default filename embeds a timestamp.

6 Data Visualisation Features

Targets

N_L / N_H	Neutron numbers of light / heavy fission fragments.
Z_L / Z_H	Proton numbers of light / heavy fission fragments.

Axis Variables

Z_{CN}, N_{CN}/Z_{CN}, $Z_{CN}{}^2/A_{CN}$, $N_{CN}-2Z_{CN}$, N_{CN}, A_{CN}.

Colour Schemes

- **Publication–based** (default) — 11 colours × 11 marker shapes.
- **Z_{CN}–based** — 33 distinct colours; legend displays only present Z_{CN} values.

Legends

Automatically rebuild when filters or colouring modes change. Located right of the plots; detached from figure layout.

7 Advanced Functions

Filter by Z_{CN}

1. Open *Filter* → *Filter by Z_{CN}*.
2. Select one or more atomic numbers ("All" resets the filter).
3. Click **OK**; plots refresh instantly.

Set Axis Ranges

1. Choose *Settings* → *Set Axis Ranges*.
2. For each subplot enter `xmin`, `xmax`, `ymin`, `ymax`. Leave blank for auto–scale.
3. Press **Apply**.

Special Highlighting

Chatillon:Tor	When enabled, Tor nucleus points from Chatillon's paper appear black and enlarged.
Bockstiegel	Optional gray colouring for all data points from Bockstiegel's paper.

8 Menu Reference

File	*Save plot...* — export current figure to PNG.
Settings	*Set Axis Ranges...* — manual axis limits.
Filter	*Filter by Z_{CN}...* — atomic–number filter.
View	*Color by Z_{CN}* (toggle), *Filled Markers* (toggle).
Help	*Quick Help* (popup), *User Guide* (opens this PDF), *About*.

9 Troubleshooting

Application Does Not Launch

- Verify `FissionData.dat` is present and readable in `/opt/fissiongraphed/_internal`.
- If problem still persists, best solution is to reinstall the program.

No Data Visible

- Ensure at least one publication is selected.
- Clear overly restrictive Z_{CN} filters.

Export Fails

- Check directory write permissions.
- Confirm sufficient disk space.

10 Technical Specifications

Plot Resolution
PNG, 300 dpi, tight bounding box (legend included).

Data Format
`.dat` files must be Tab–separated; required columns: `Publication`, `Nucleus`, `Z_CN`, target variables plus pre–computed ratios (see header row of `FissionData.dat` file).

For feature requests or bug reports, contact the author via email or visit the project repository.