




# Elephant

## Electrophysiology Analysis Toolkit

Forschungszentrum Jülich; CNRS

 A solution for the analysis of high-dimensional neural activity data

### TECHNOLOGY DESCRIPTION

Elephant is a Python library that provides tools for the analysis of neuronal activity data, such as spike trains, local field potentials, and intracellular data. Elephant includes emerging tools to characterize the coordinated dynamics of large neural populations and methods to analyse the relationship of data recorded on multiple scales of observation. Elephant represents neural data in the Neo object model, which offers a large range of file backends to load data from various file formats.

**Analyse and compare functional data from electrophysiological experiments and simulations of spiking neural networks using a common tool.**

**Open-source, community-driven development includes reference implementations of advanced analysis methods in a single location with a uniform interface and data model.**

### AREAS

Electrophysiology | Network Simulation | Analysis





## COMPETITIVE ADVANTAGES

Elephant provides a diverse set of over 50 methods suitable for the analysis of electrophysiological data that

- is easy to use by means of a common interface across data sources,
- provides a rigorous basis to enable the validation of the activity obtained from network simulations of the brain,
- utilizes parallel compute resources for selected methods,
- includes validated, state-of-the-art tools to address the advanced analysis challenges in neuroscience.



# elephant

ELECTROPHYSIOLOGY ANALYSIS TOOLKIT

Elephant focuses on strategies for ensuring results reproducibility and parallelization.

## TECHNOLOGY READINESS LEVEL



## APPLICATION & MARKET POTENTIAL

- By use of the open Neo data model for electrophysiological data, Elephant analysis methods can be easily integrated into different applications, including graphical analysis tools, network simulation engines, or databases for electrophysiological data.
- Elephant provides a growing number of methods to characterize and assess the brain dynamics expressed by large-scale measurements.
- Analysis tools are easily transferrable to a context outside of neuroscience where data consist of sampled time series and point process data.

## REFERENCES

Elephant resources on the web:

<http://python-elephant.org>

Follow Elephant on Twitter:

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