



# Motifs 1–3: How can the electronic structure of materials be determined more precisely?

The data in these graphics refer to the electronic charge density of urea. They comprise the density matrix elements and two corresponding atomic orbitals.



# Motif 4 How can the electronic structure of materials be determined more precisely?

This visual shows the X-ray diffraction data of the amino acid alanine: the "structure factor" for different diffraction planes of the amino acid crystal and the three "Miller indices", which define these diffraction planes in the crystal lattice.





# Motifs 5-6 How does the metabolism in bacteria work?

The data represent the frequency distributions of individual metabolic reaction rates (fluxes) in the bacterium Escherichia coli.



### Motif 7 How do robots find their way on Mars?

The navigation data used here include longitude and latitude, time and speed.



### Motifs 8–9 How much ozone is in the atmosphere?

The images visualize data used to calculate the ozone change rates. The temporal input is the day of the year, the spatial information is given by latitude and altitude. Various other parameters are also included.



## Motif 10 How does the function of a protein change when its spatial structure varies?

The basis of these images are the different spatial structures of a protein with the coordinates *x*, *y*, *z*, based on the amino acids it contains. Each protein structure varies slightly because of variations in sequence length and binding sites of these amino acids.



# Motif 11 How do cells move?

The data used here include the positions of the cell centers (x, y, z) of the tracked cells over time. Cells of the nematode C. elegans were examined.



## Motifs 12–13 How to predict severe earthquakes?

The data used for this graphical conversion refers to earthquakes in northern Chile in 2014 and includes earthquake strength, time units, longitude and latitude line, depth in kilometers and measurement inaccuracy of earthquake strength.



### Motifs 14-15 How fast do permafrost soils thaw?

The dataset used for this graphics describes the length and location of approximately 3,000 ice wedge crevasses in the Arctic of Alaska in July 2019.



### Motifs 16–17 How to irradiate optimally in cancer treatment?

The following data was processed: The expected dose distribution, the dose variance with respect to the possible sources of uncertainty, the spatial coordinates *x*, *y*, *z* and the tissue density at these coordinates.



## Motifs 18–19 How do brains synchronize?

Brain synchronicity: The data set describes how two neuronal time series of signals from the human brain relate to each other, i.e. how they relate to each other in terms of time and frequency.



# Motifs 20-23 How do brains synchronize?

Neuronal signals of interacting persons: This data set contains signals from 22 different regions of the human brain. Each of them originates from two interacting test participants. The brain region, the coordinates of the measuring point and the rate of change of the oxyhemoglobin concentration are recorded.



# Motifs 24–25 How stable are our power grids?

The graphics are based on the following data: power grid frequencies in Hertz, measured every second over a period of several years in Continental Europe (2012-2019), Northern Europe (2015-2019) and Great Britain (2014-2019).



### Motif 26 Who controls our inner clock?

The presentation is based on the data of a simulated cyclic oscillation behavior of three different proteins. The time is given in hours, the concentration in arbitrary units.