

SIGNAL PROCESSING IN MNE: DAY 2

2 – SPECTRAL ANALYSIS THE TIME_FREQUENCY MODULE



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EINSTEIN
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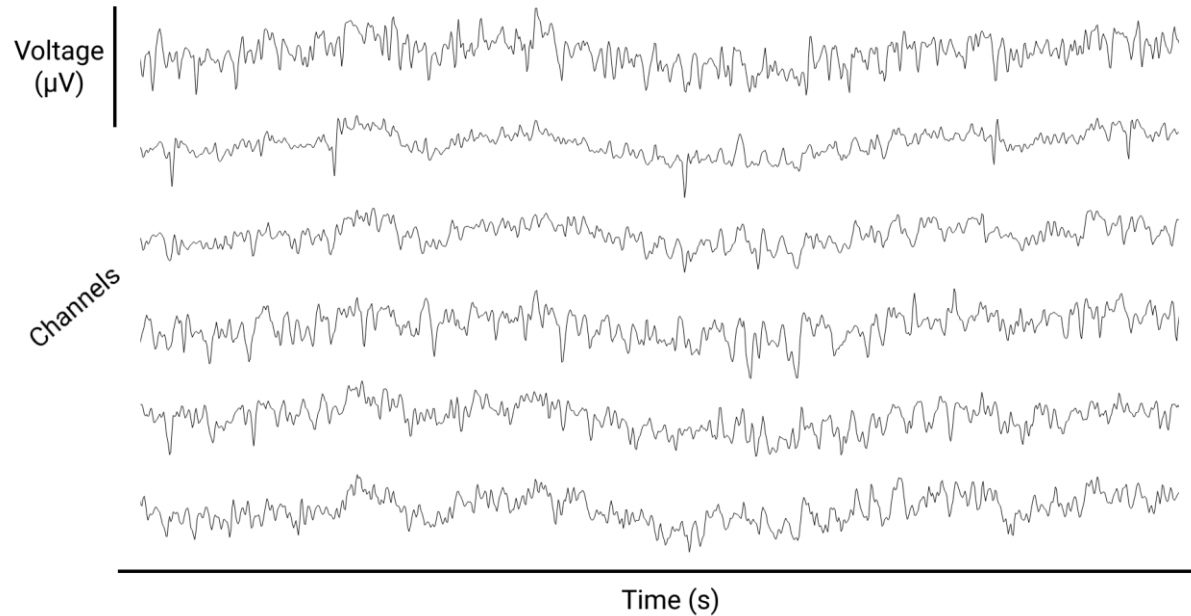


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Spectral analysis

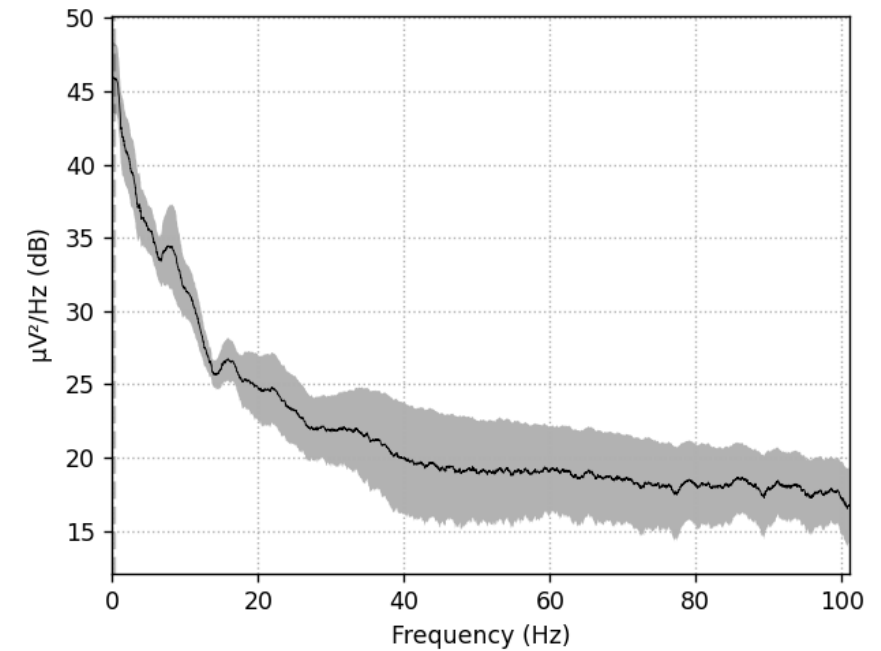
Timeseries data



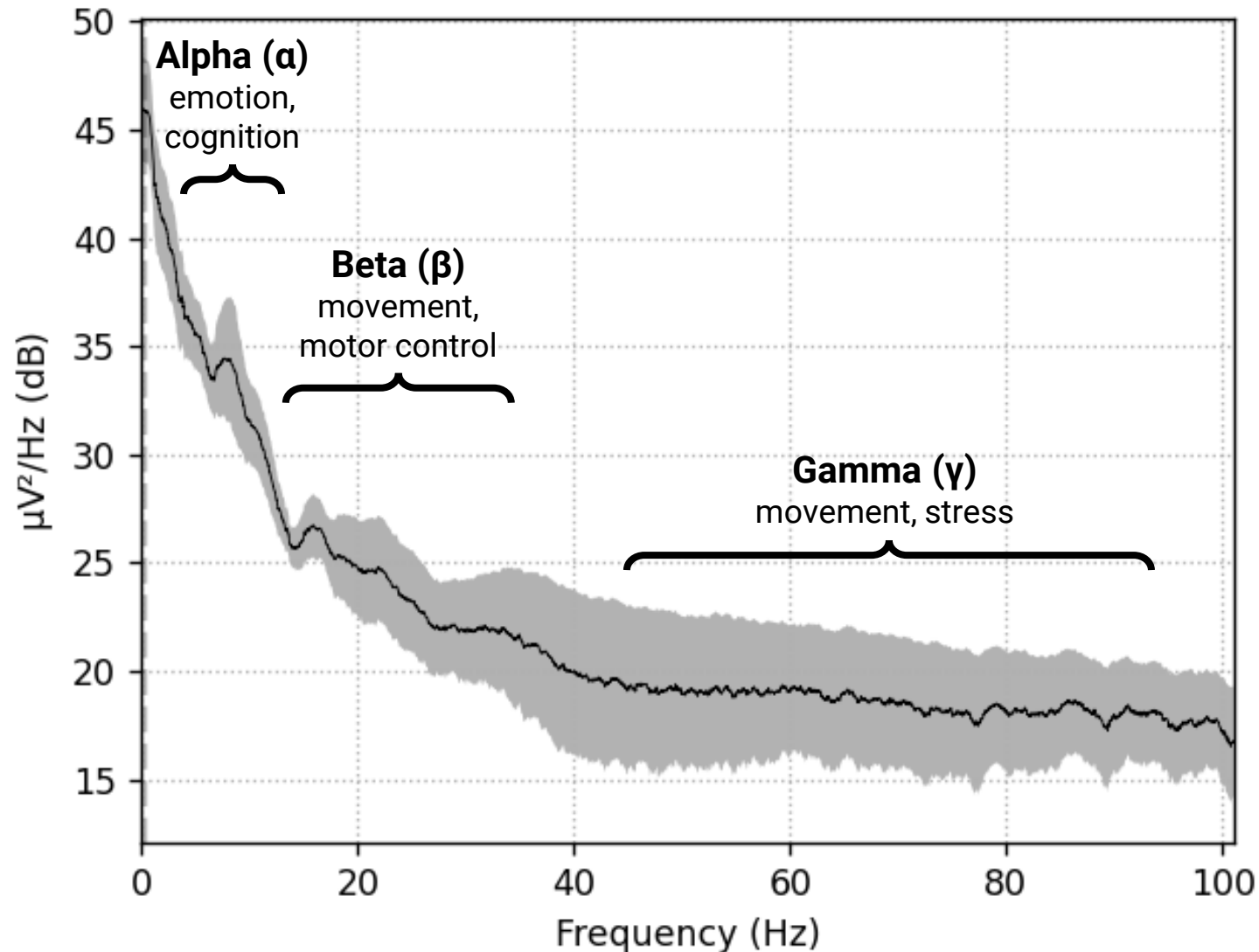
Fourier
transform






Power spectral density



Spectral analysis for neuroscience



Spectral analysis

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Section Navigation

- Most-used classes
- Reading raw data
- File I/O
- Creating data objects from arrays
- Exporting
- Datasets
- Visualization
- Preprocessing
- Events
- Sensor Space Data
- Covariance computation
- MRI Processing
- Forward Modeling
- Inverse Solutions
- Source Space Data
- Time-Frequency**
- Connectivity Estimation
- Statistics
- Simulation
- Decoding

Time-Frequency

`mne.time_frequency`:

Time frequency analysis tools.

<code>AverageTFR</code> (info, data, times, freqs, nave[, ...])	Container for Time-Frequency data.
<code>EpochsTFR</code> (info, data, times, freqs[, ...])	Container for Time-Frequency data on epochs.
<code>CrossSpectralDensity</code> (data, ch_names, ...[, ...])	Cross-spectral density.
<code>Spectrum</code> (inst, method, fmin, fmax, tmin, ...)	Data object for spectral representations of continuous data.
<code>SpectrumArray</code> (data, info, freqs, *[, verbose])	Data object for precomputed spectral data (in NumPy array format).
<code>EpochsSpectrum</code> (inst, method, fmin, fmax, ...)	Data object for spectral representations of epoched data.
<code>EpochsSpectrumArray</code> (data, info, freqs[, ...])	Data object for precomputed epoched spectral data (in NumPy array format).

Functions that operate on mne-python objects:

<code>csd_tfr</code> (epochs_tfr[, tmin, tmax, picks, ...])	Compute covariance matrices across frequencies for TFR epochs.
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Onto the notebook...

Conclusion

- MNE's `time_frequency` module offers many tools for performing spectral analyses
- Methods of `Raw/RawArray` and `Epochs/EpochsArray` classes are convenient for spectral analysis and filtering
- Artefact rejection tools based on spectral filtering are also offered in MNE

```
compute_proj_ecg()
```

```
compute_proj_eog()
```