

SIGNAL PROCESSING IN MNE: DAY 3

3 – SPECTRAL CONNECTIVITY MULTIVARIATE CONNECTIVITY IN MNE



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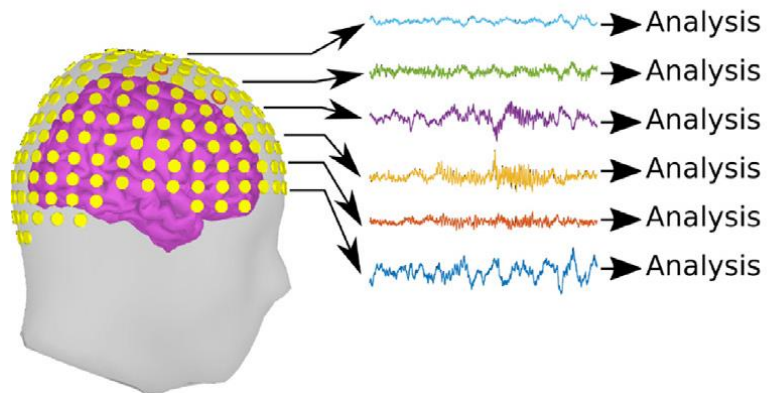


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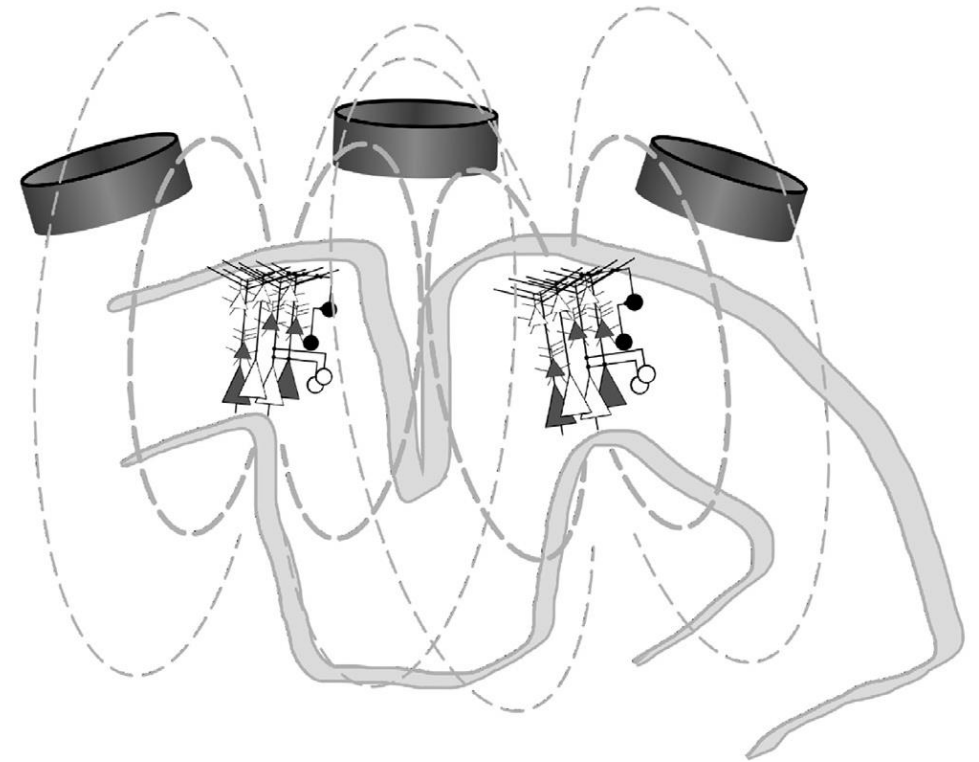
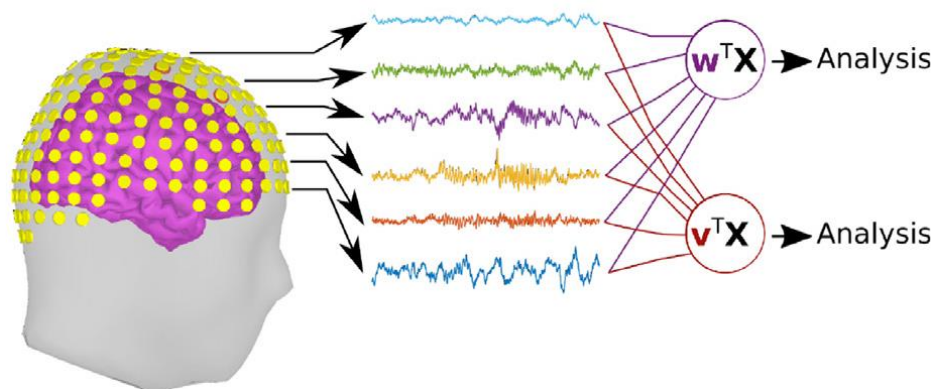


Uni/bi- vs. multi-variate analyses

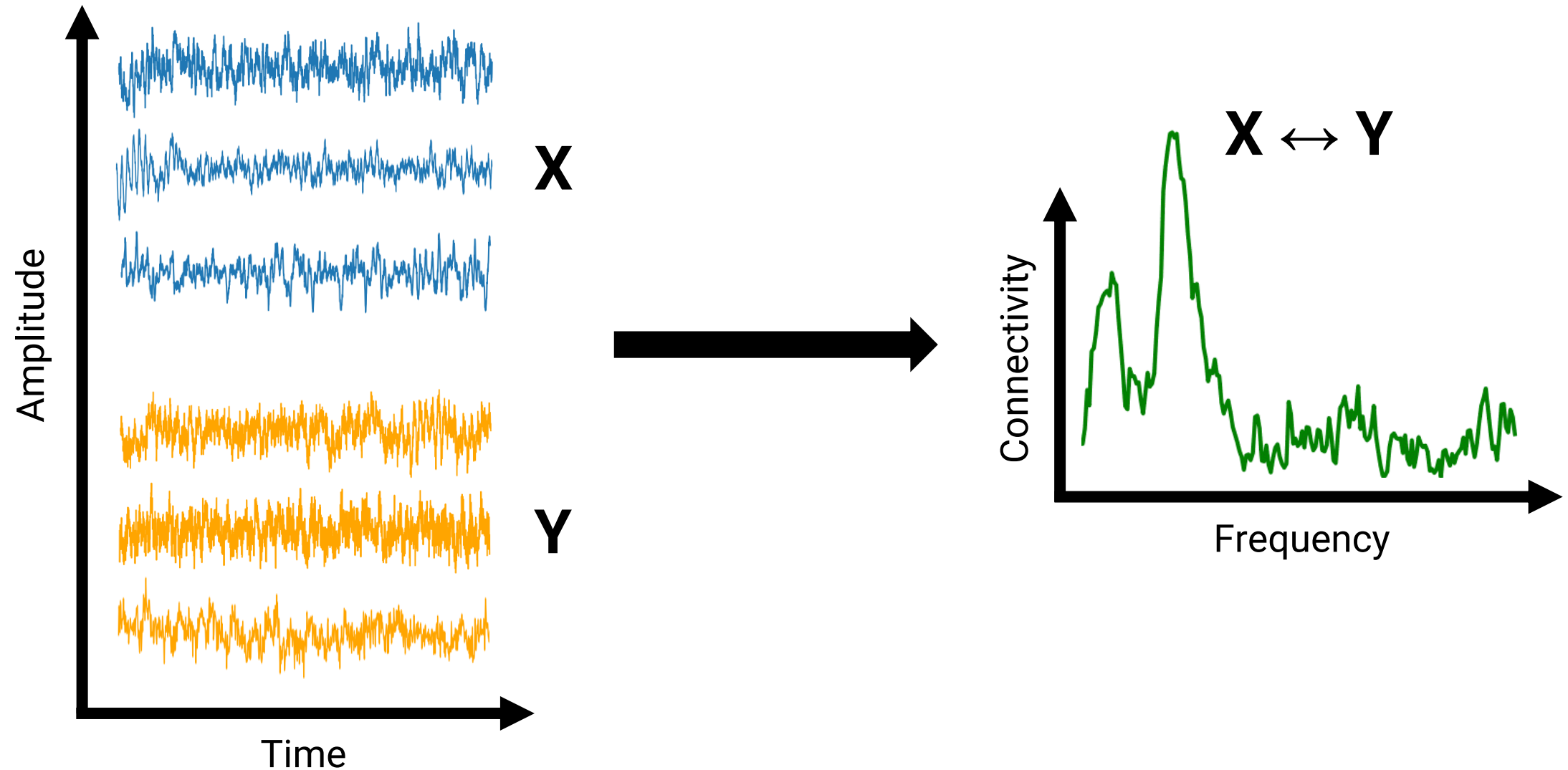
Univariate approach



Multivariate approach



Multivariate spectral connectivity



Multivariate spectral connectivity

MNE-Connectivity 0.6.0 documentation

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mne_connectivity.spectral_connectivity_epochs

```
mne_connectivity.spectral_connectivity_epochs(data, names=None, method='coh',
indices=None, sfreq=None, mode='multitaper', fmin=None, fmax=inf, fskip=0,
faverage=False, tmin=None, tmax=None, mt_bandwidth=None, mt_adaptive=False,
mt_low_bias=True, cwt_freqs=None, cwt_n_cycles=7, gc_n_lags=40, rank=None,
block_size=1000, n_jobs=1, verbose=None)
```

[\[source\]](#)

Compute frequency- and time-frequency-domain connectivity measures.

The connectivity method(s) are specified using the “method” parameter. All methods are based on estimates of the cross- and power spectral densities (CSD/PSD) S_{xy} and S_{xx} , S_{yy} .

Parameters:

data : [array like](#), shape=(*n_epochs*, *n_signals*, *n_times*) | [Epochs](#)

The data from which to compute connectivity. Note that it is also possible to combine multiple signals by providing a list of tuples, e.g., `data = [(arr_0, stc_0), (arr_1, stc_1), (arr_2, stc_2)]`, corresponds to 3 epochs, and `arr_*` could be an array with the same number of time points as `stc_*`. The array-like object can also be a list/generator of array, shape=(*n_signals*, *n_times*), or a list/generator of `SourceEstimate` or `VolSourceEstimate` objects.

Onto the notebook...

Conclusion

- Tools for computing multivariate spectral connectivity in the `mne-connectivity` package
 - `spectral_connectivity_epochs()`
 - `spectral_connectivity_time()`
- Directed and undirect connectivity methods supported
- Can be computed from `Epochs/EpochsArray` objects and data arrays