SpectraVis: A web app for analyzing dynamic, task-related neural correlation / coherence networks

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Summary: Analysis of task-driven neural networks in the brain is becoming increasingly common, but as technology improves and we are able to simultaneously record from more electrodes, the dimensionality of the analysis becomes large. Neural signals can vary over time, frequency, within and between brain regions. This is particularly problematic when we consider associations between neural signals, which scale quadratically with the number of electrodes. While statistical techniques and strong hypothesis are important for reducing dimensionality and understanding these networks, an often neglected aspect for understanding these networks is visualization.

Detail:

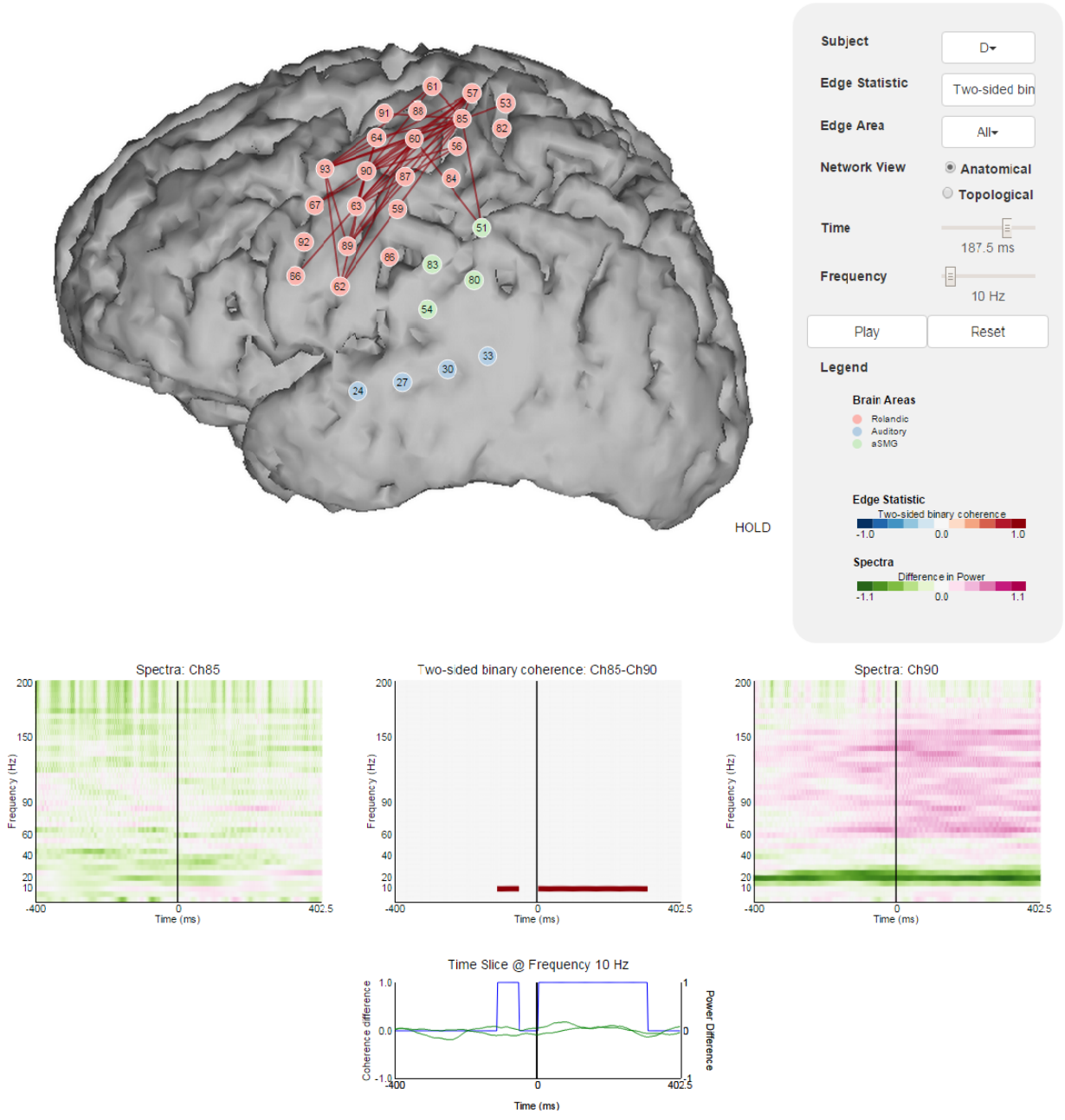
Subject
D
Edge Statistic
Two-sided bin
Edge Area
All
Network View
Anatomical
Topological
Time
187.5 ms
Frequency
10 Hz
Play
Reset
Legend
Brain Areas
Rolandic
Auditory
aSMG
Edge Statistic
Two-sided binary coherence
-1.0
0.0
1.0
Spectra
Difference in Power
-1.1
0.0
1.1
HOLD
Spectra: Ch85
Two-sided binary coherence: Ch85-Ch90
Spectra: Ch90
Frequency (Hz)
Time (ms)
Time Slice @ Frequency 10 Hz
Coherence difference
Power Difference

Figure 1: