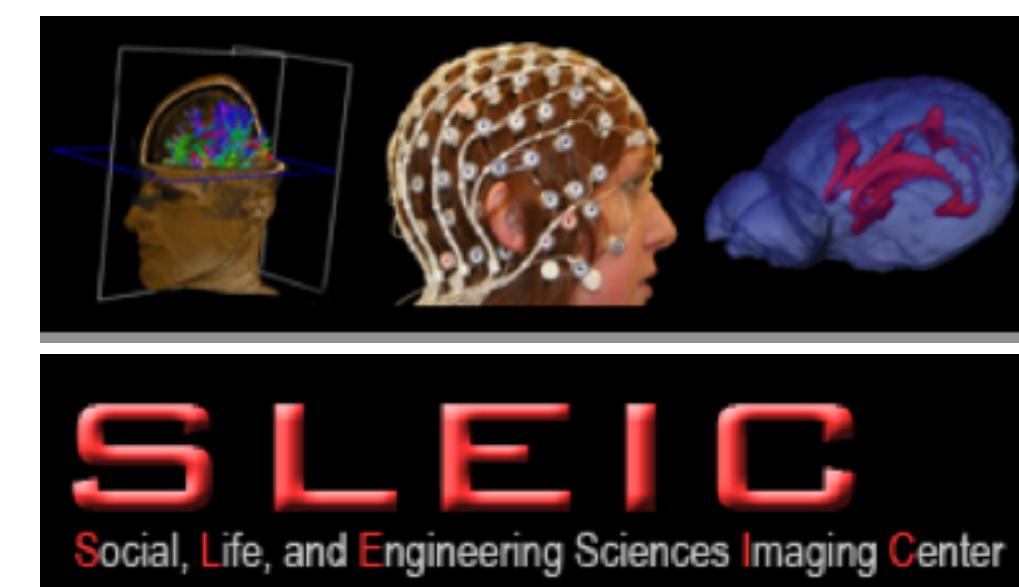


Distinct space-time sampling thresholds of VEP responses to optic flow



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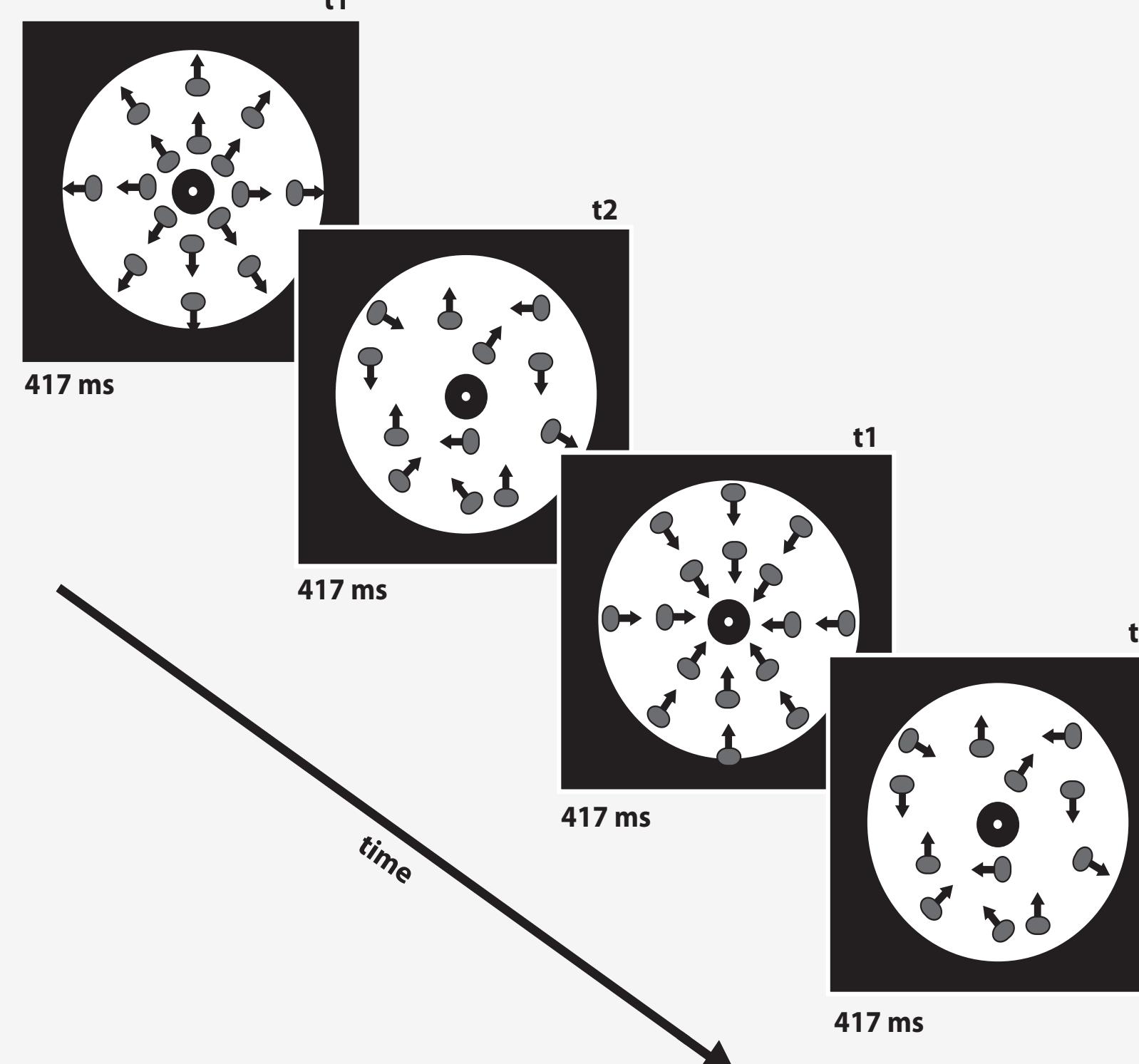


Poster 467.01 Presented at The Society for Neuroscience Meeting, New Orleans, LA, October 15, 2012

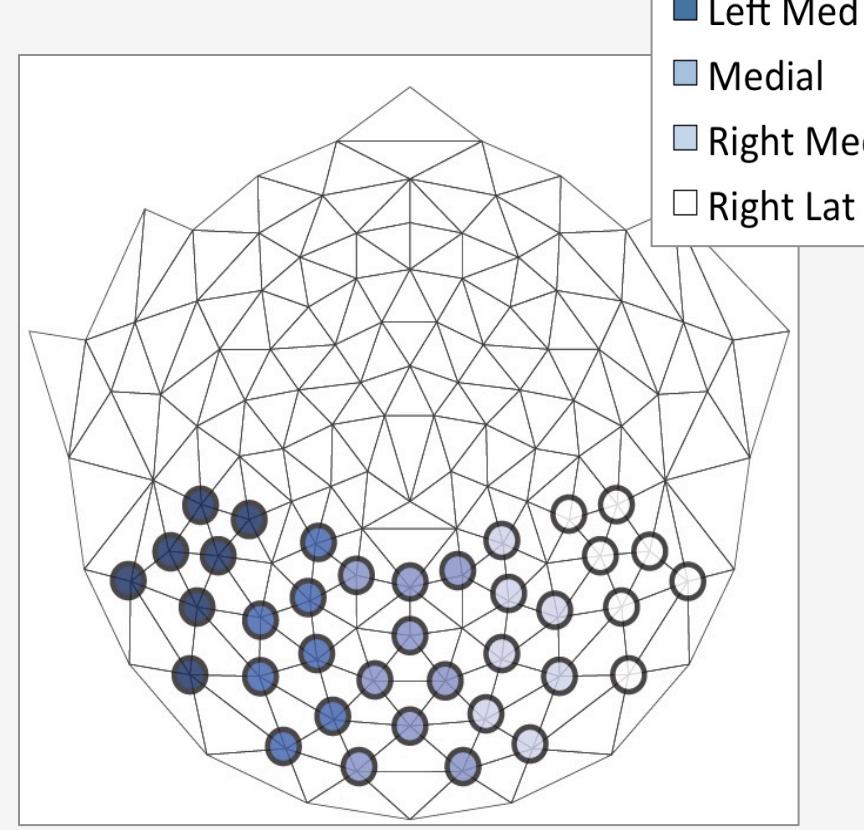
Research Questions

- Fesi et al. (VSS 2011)
 - ssVEP Responses to coherent optic flow
 - Compared across speeds and flow patterns
 - At Slow Speeds – channels differed by pattern
 - At Fast Speeds – common dorsomedial response
 - Q: How do the responses vary across dot lifetimes?
 - Q: Distinct or similar space-time sampling thresholds?

Methods

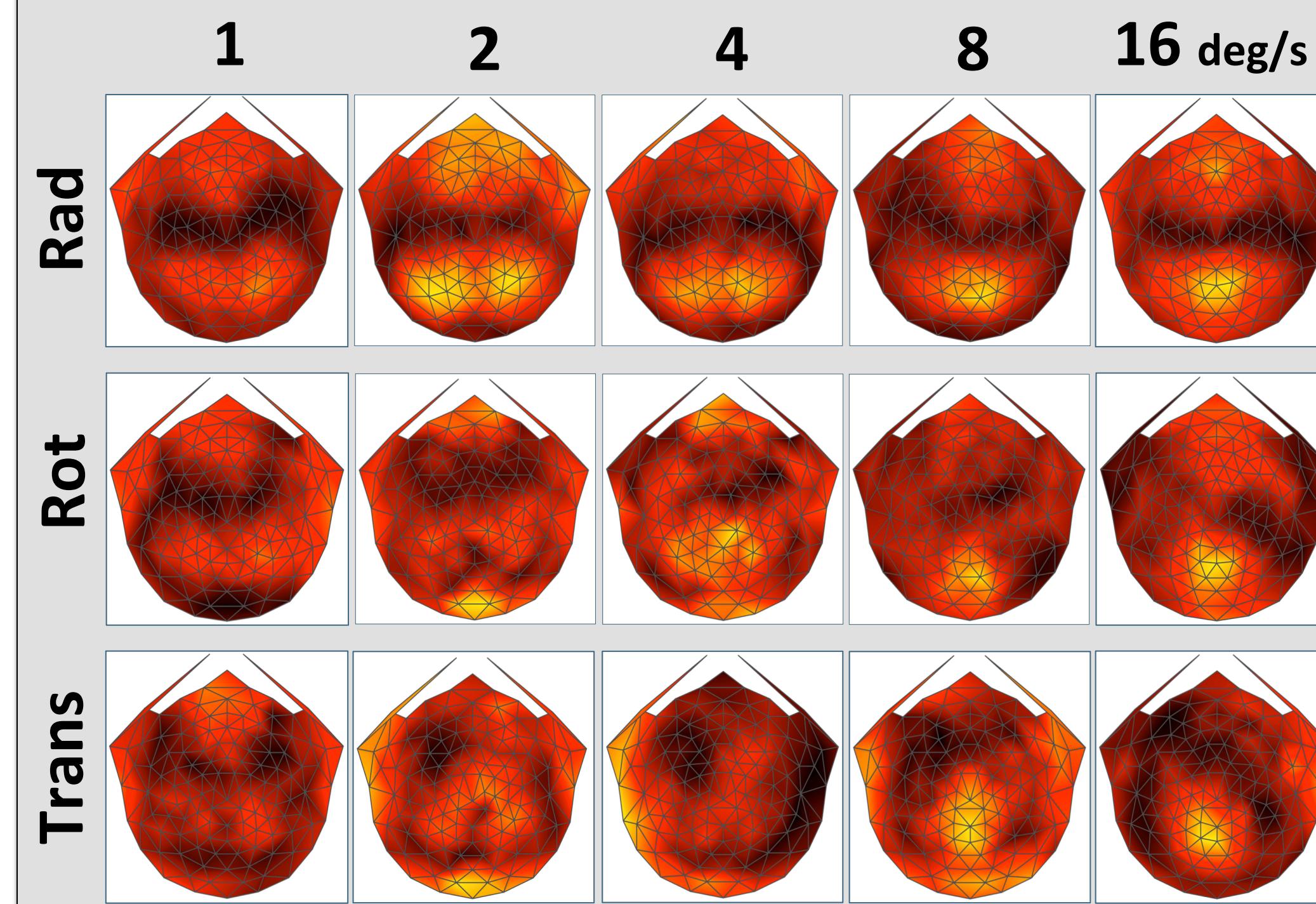


Subjects: 20 adults (mean age: 19.6 yrs)
Patterns: Radial Motion, Rotation
Dot Speeds: 2, 16 deg/s
Dot Lifetimes: 83.3, 166.7, 666.7 ms
Coherence Modulation: 1.2 Hz (F1)
Dot updates: 24 Hz (F2)
Dot Size: 7 arc min white dots
Mean Luminance: 43.244 cd/m²
Contrast: 90%
Modulation Type: On/Off Square
View Distance: 60 cm



To the right is a chart of aggregate groups of channels used for the amplitude plots included in the results sections.

Fesi et al., VSS 2011

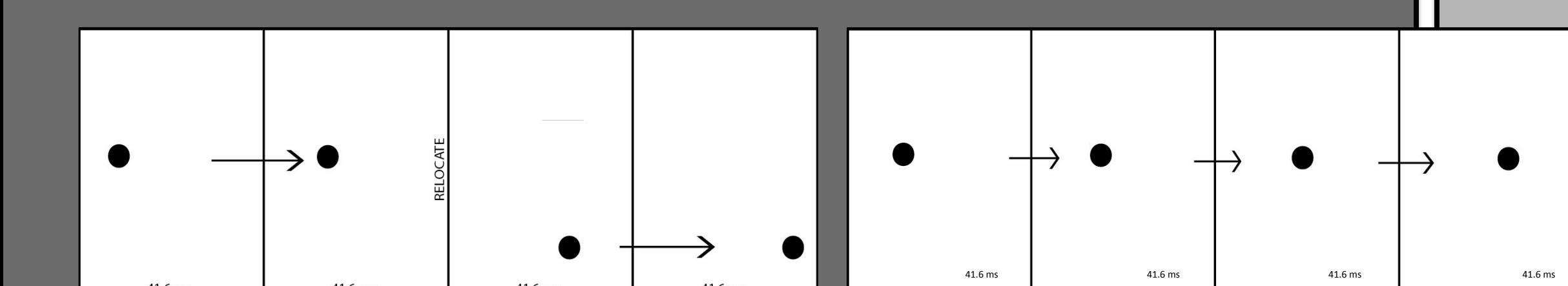


Slow Speeds
Pattern-Specific
Radial → Lateral channels
Rot/Trans → Occipital Pole

Fast Speeds
Pattern-General
Dorsomedial Occipital
Radial strongest

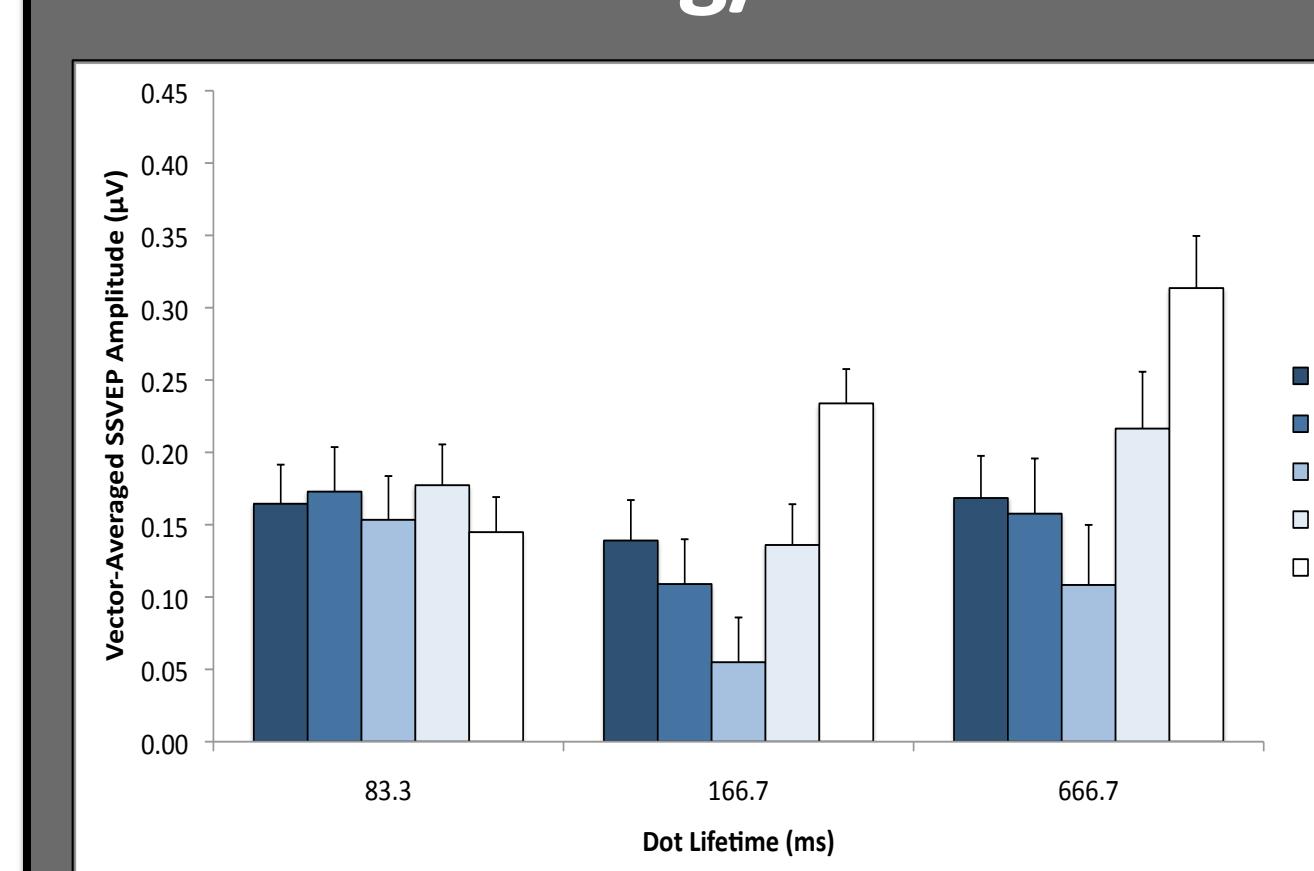
Results

2 Frames: 83.3 ms

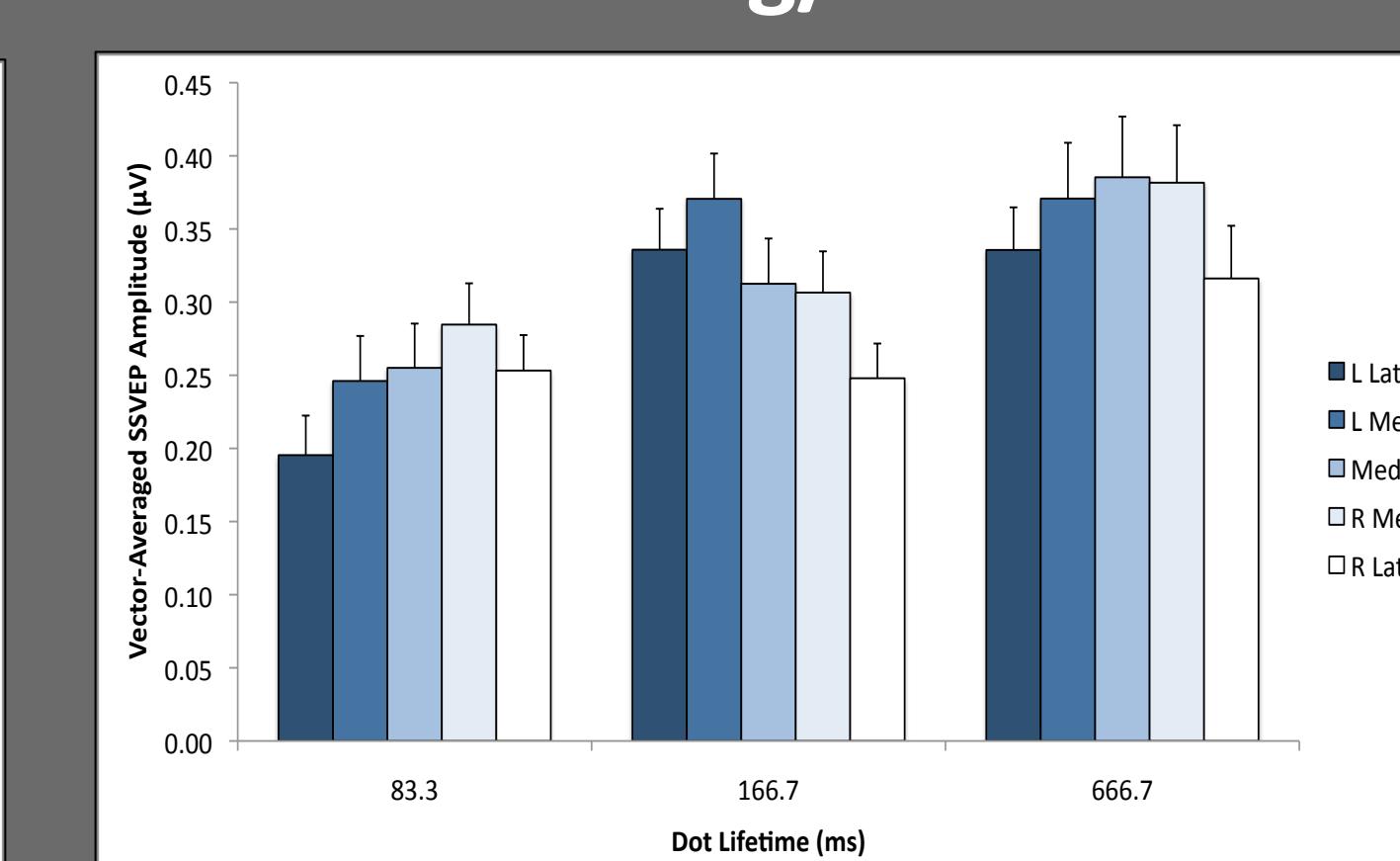


4 Frames: 166.7 ms

Radial 2 deg/s - 1F1

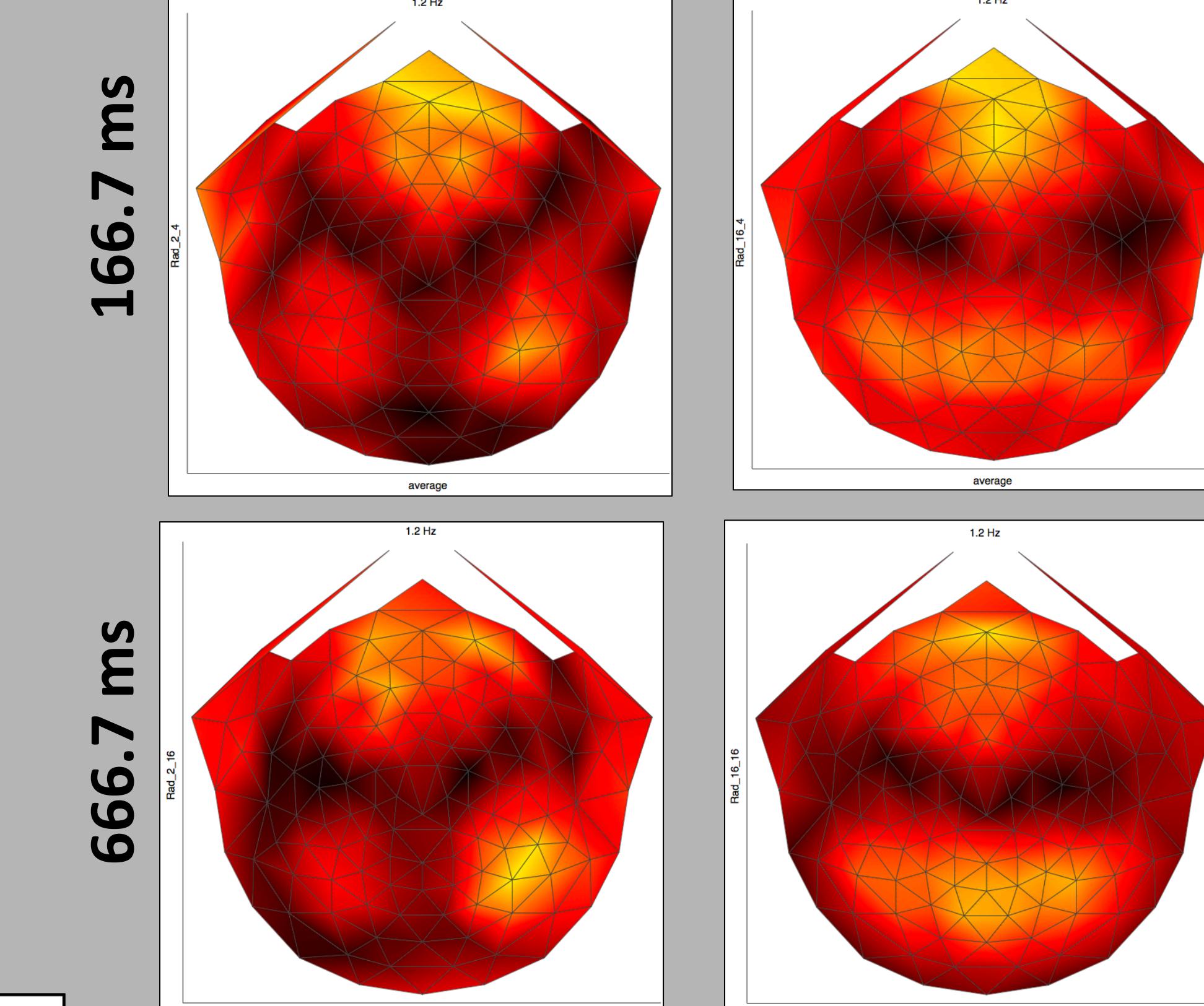
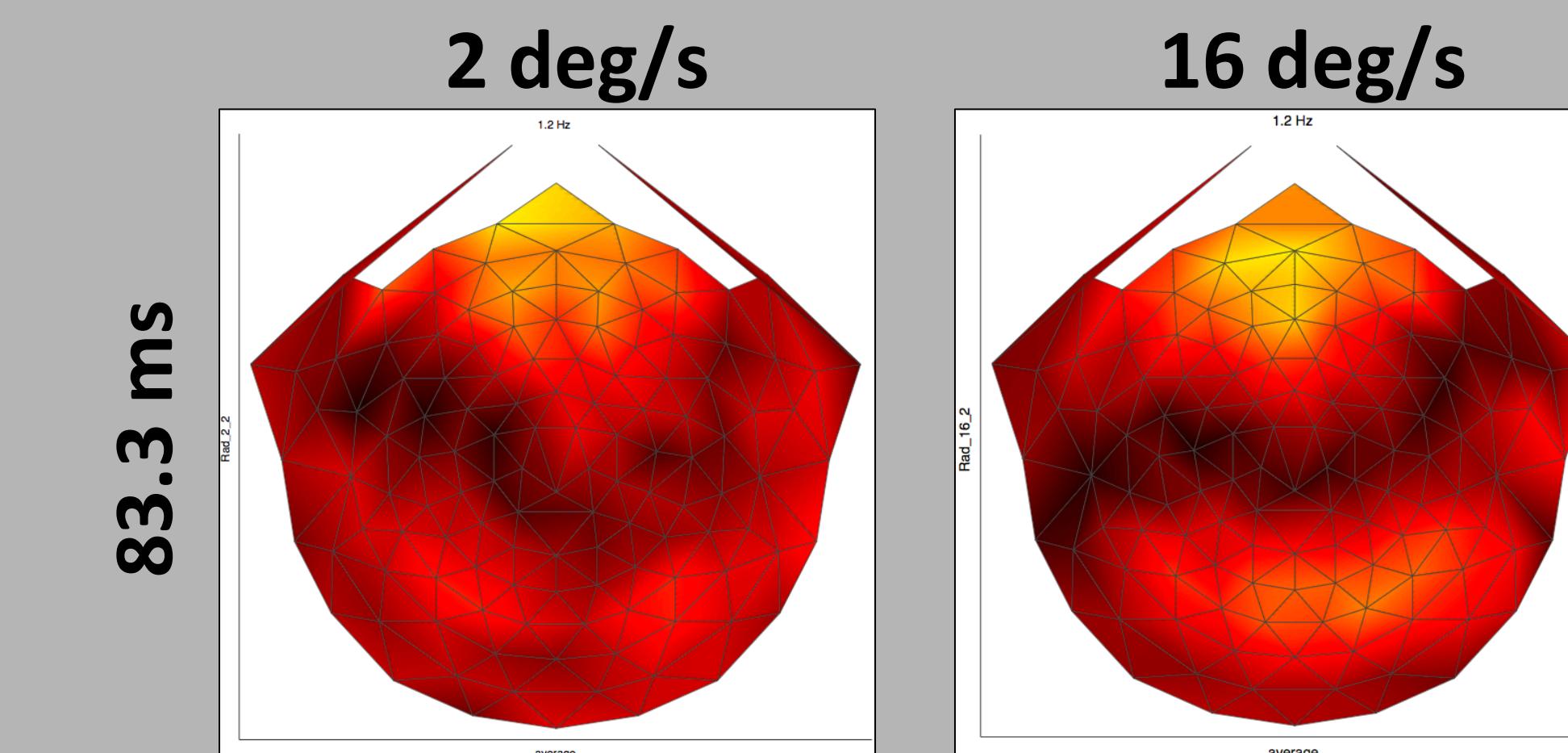


Radial 16 deg/s - 1F1

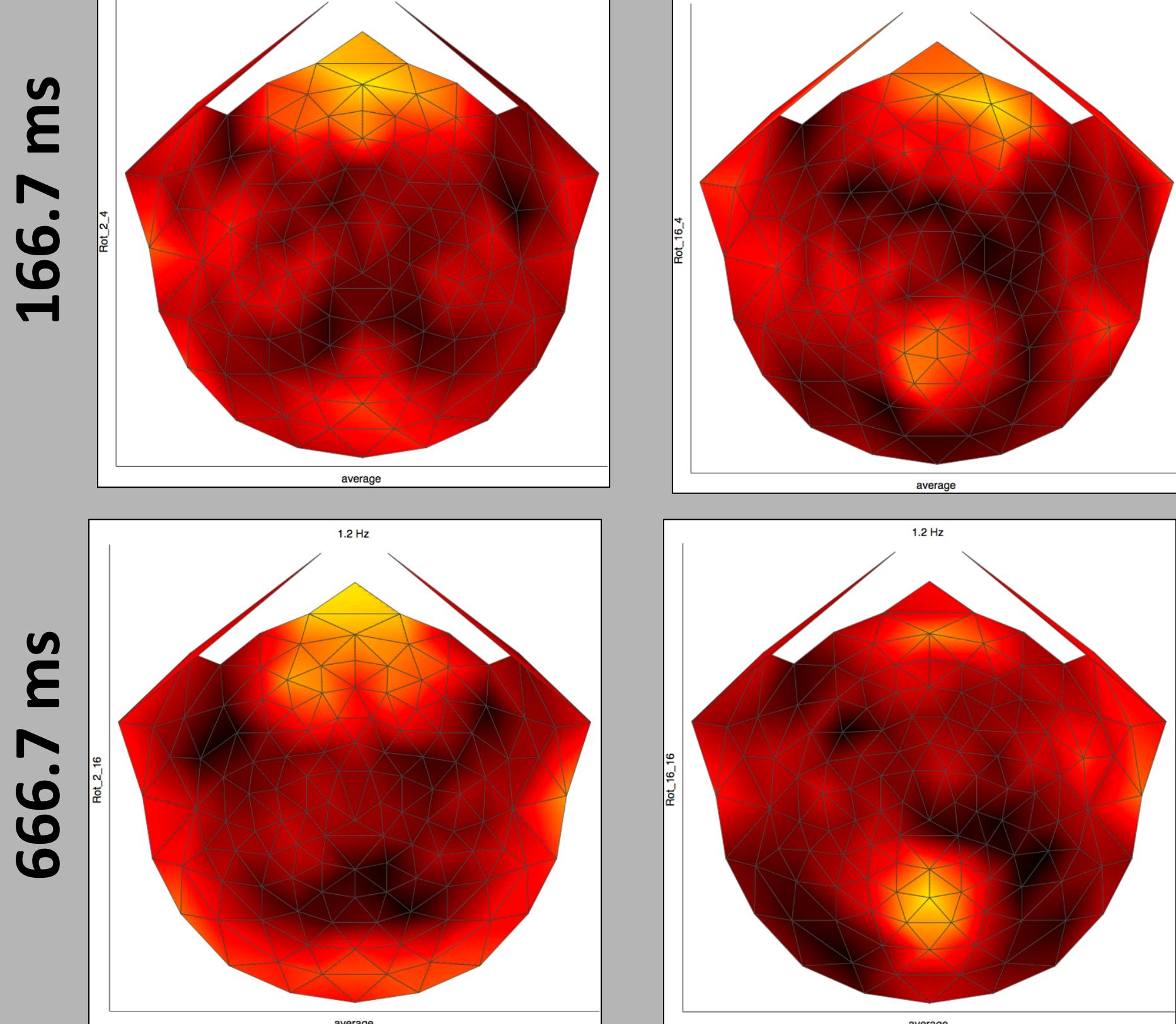
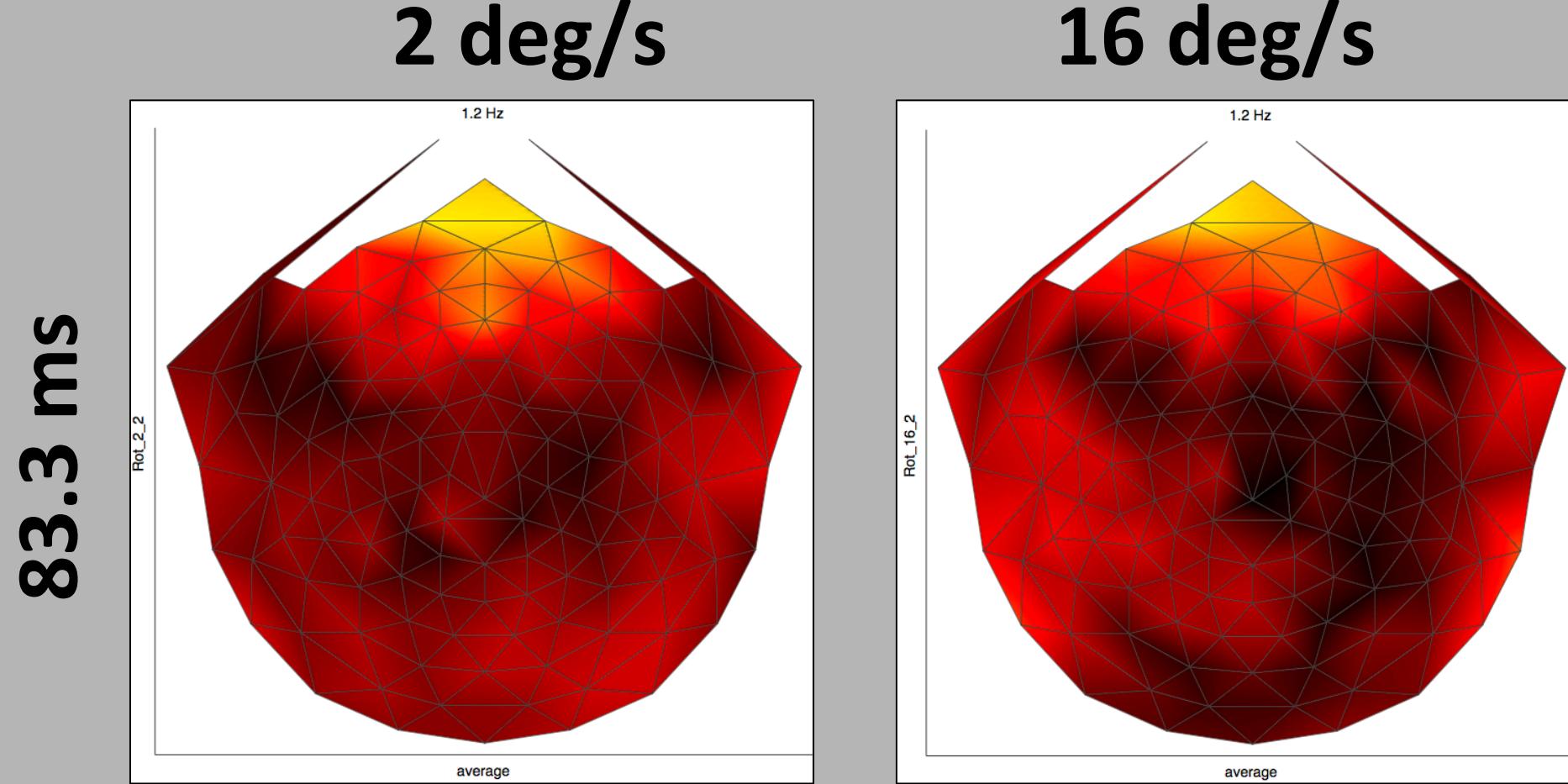


Results

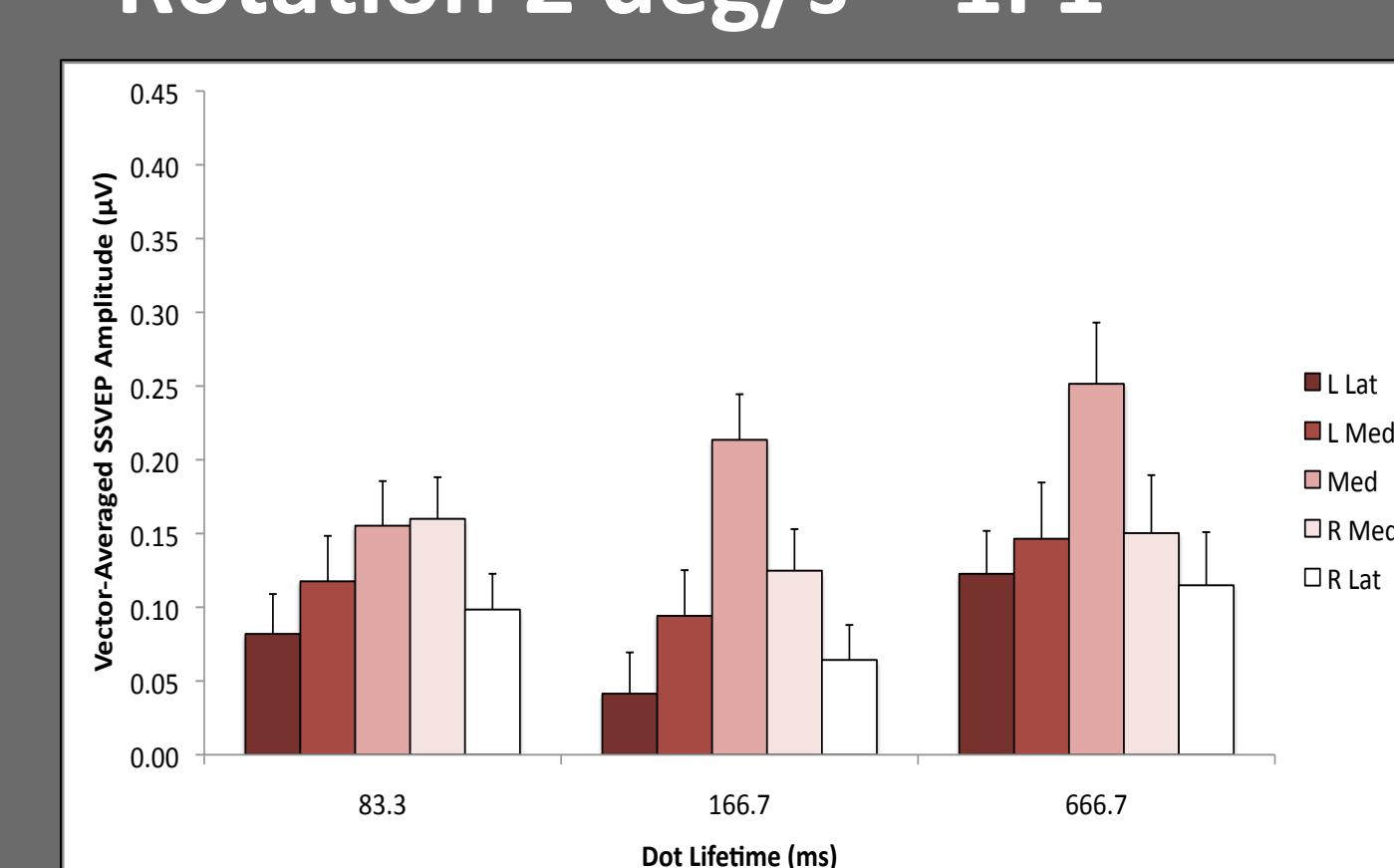
Radial



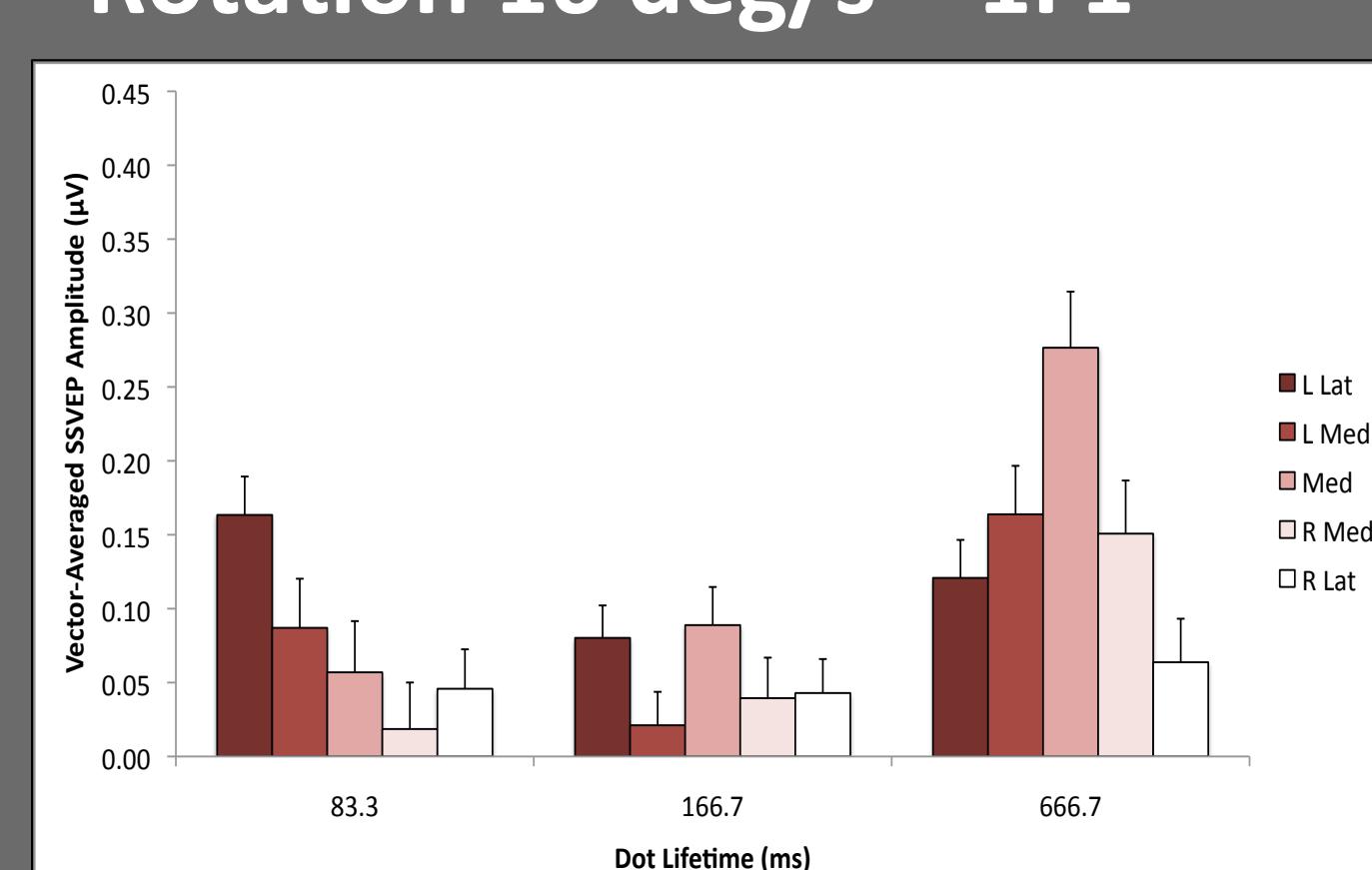
Rotation



Rotation 2 deg/s - 1F1



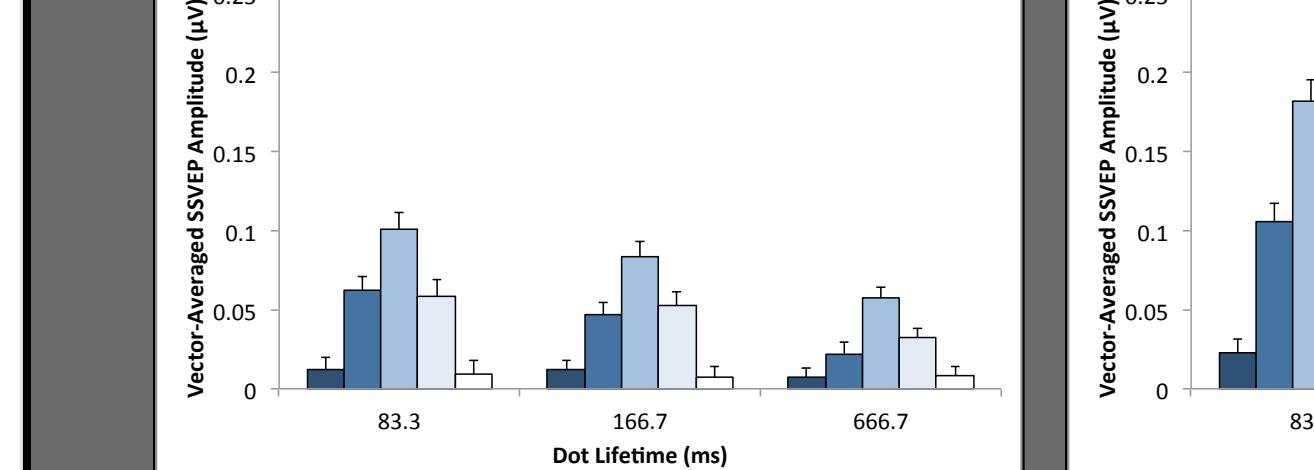
Rotation 16 deg/s - 1F1



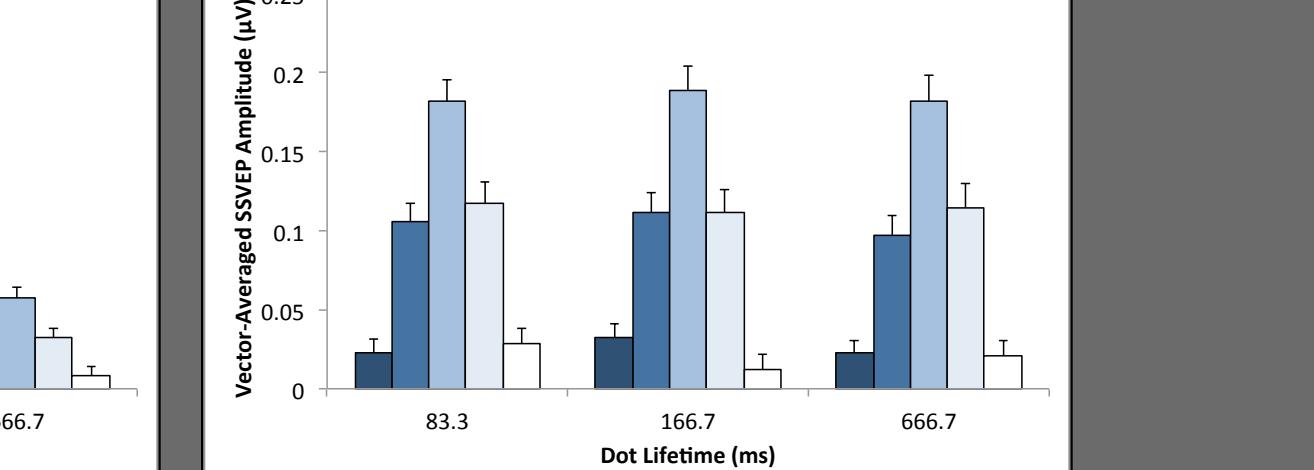
Global Modulation (1F1):

- Dorsomedial response
- Distinct thresholds across patterns
 - Radial more rapid & robust than Rotation
- Dot Update rate (1F2):
 - Amplitude increases with speed
 - Slow speed: decreases with lifetime

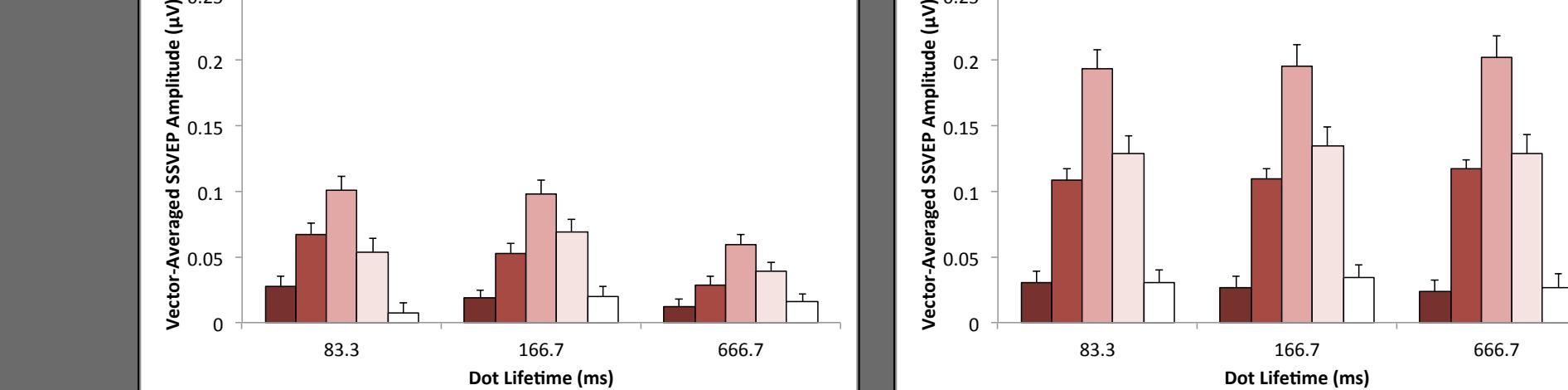
Radial 2 deg/s - 1F2



Radial 16 deg/s - 1F2



Rotation 2 deg/s - 1F2



Rotation 16 deg/s - 1F2

