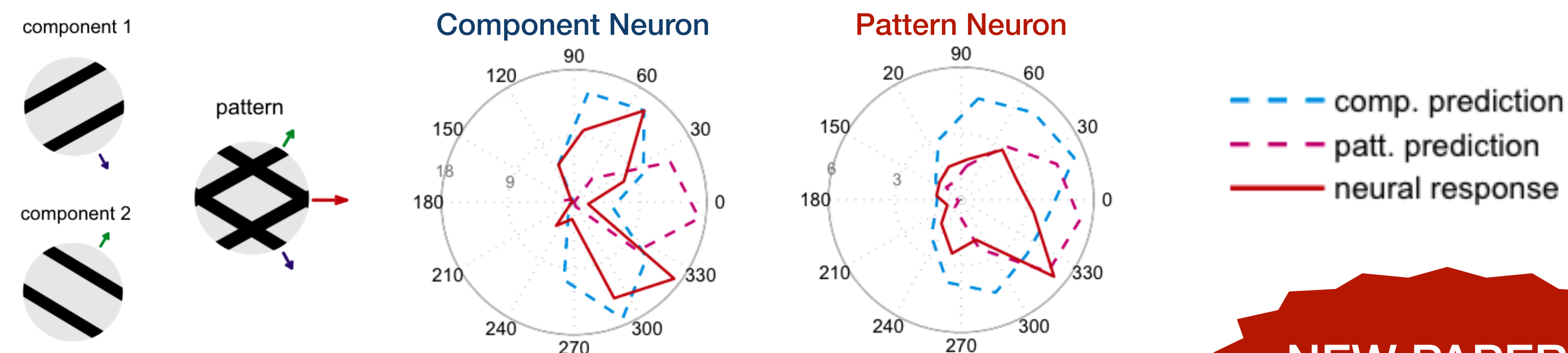




INTRODUCTION

Area 1 of the Somatosensory Cortex integrates local tactile motion direction cues to compute a global motion percept (Pei et. al, 2011).

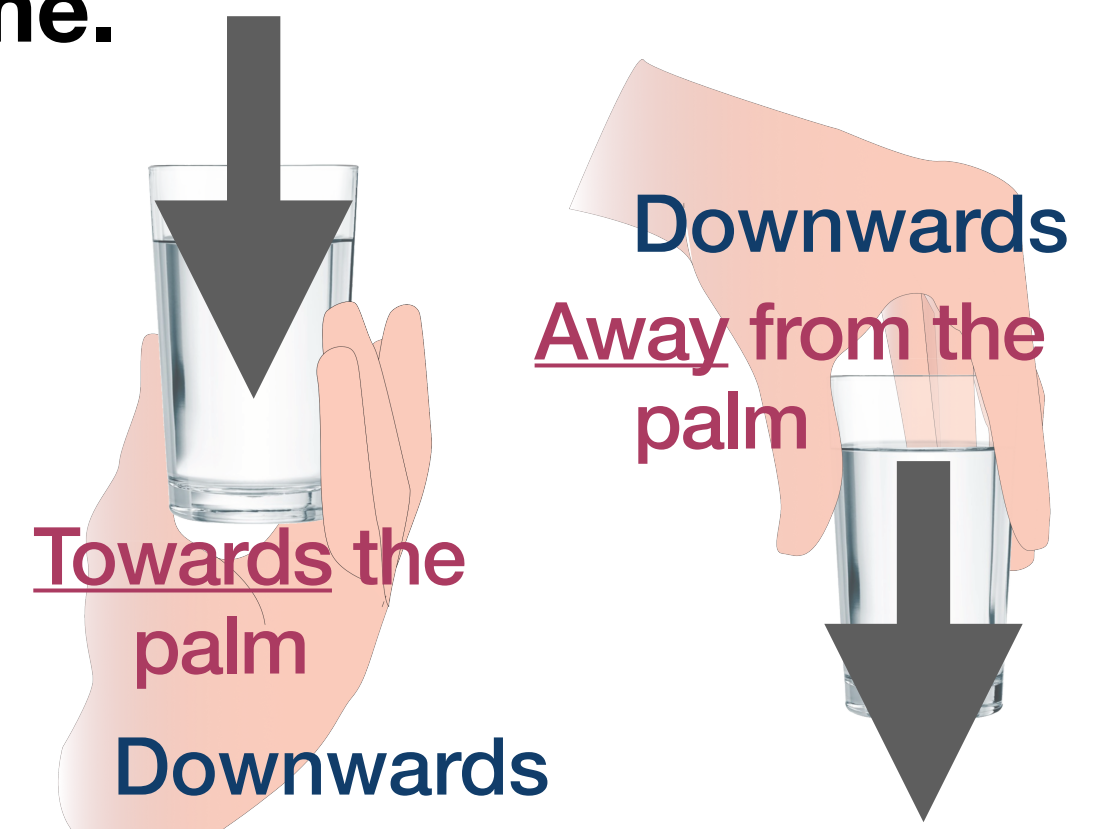


NEW PAPER !!



This model was derived with the hand in only one posture, so we don't know if Area 1 neurons are modulated by proprioception.

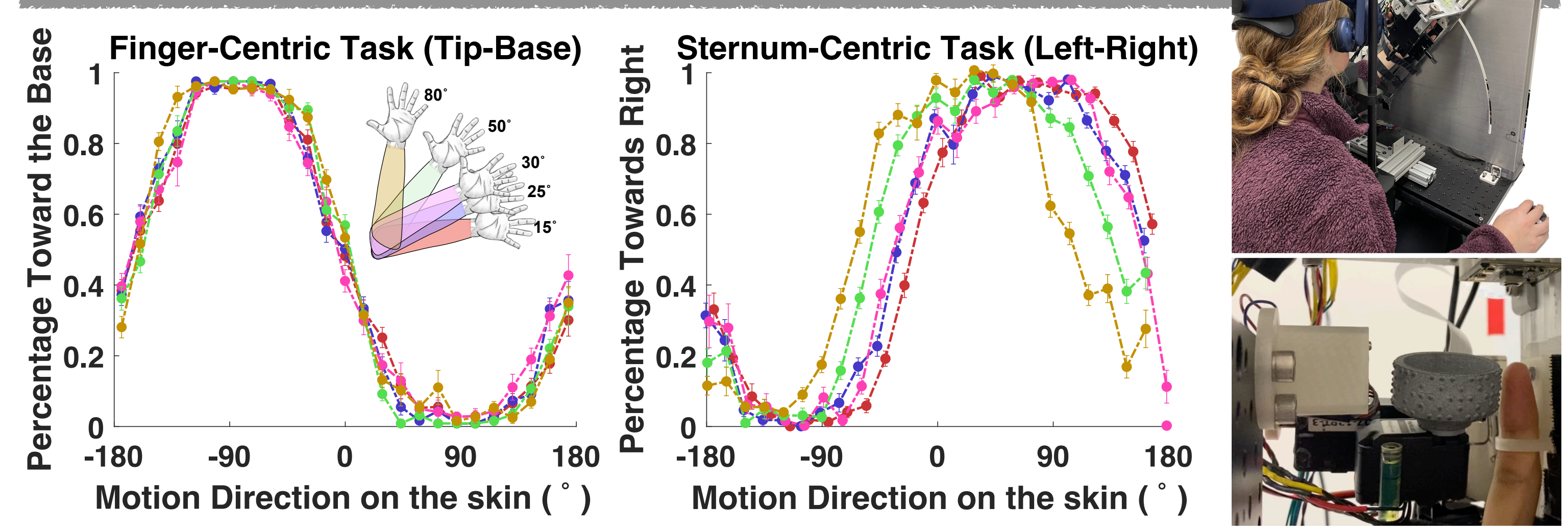
Additionally, integration of touch and proprioception is dependent on the reference frame.



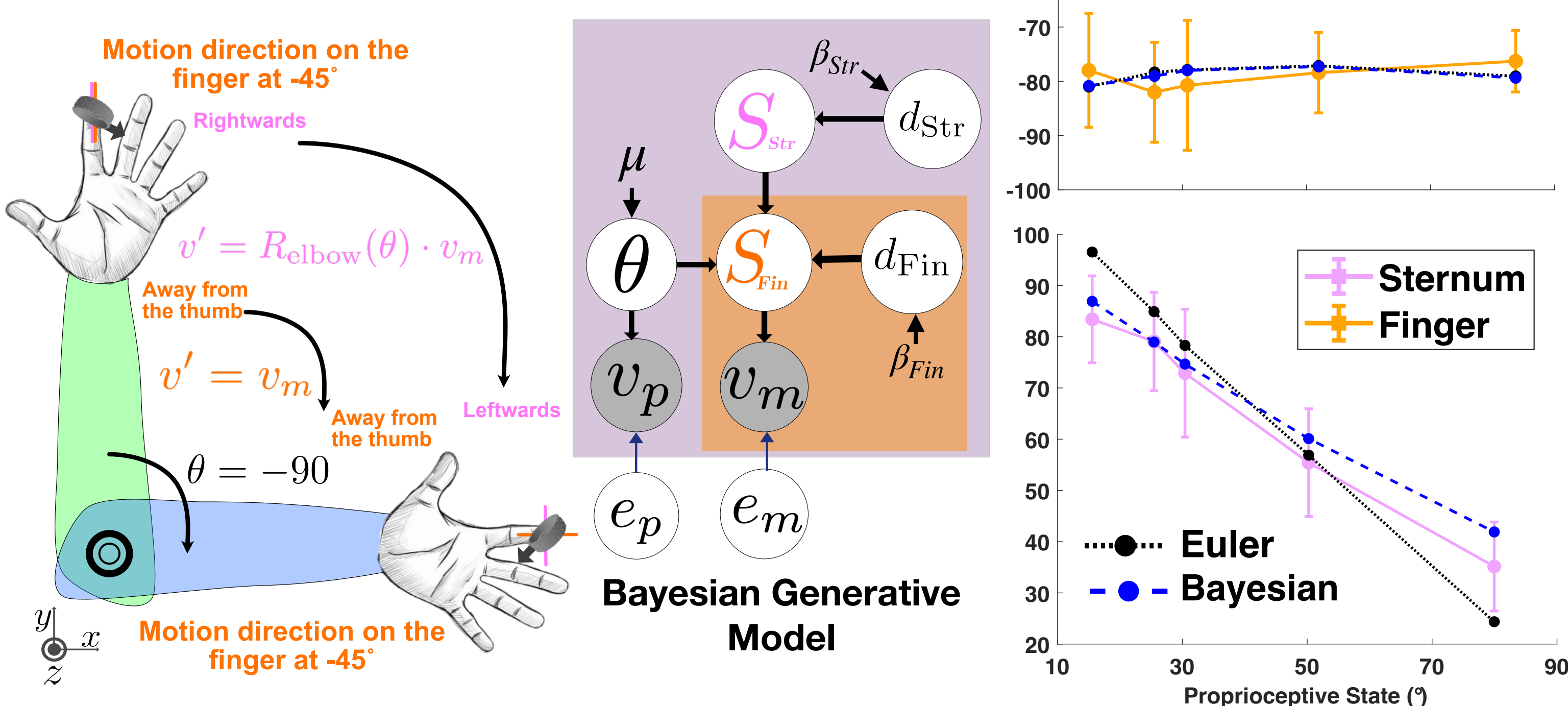
Downwards
Away from the palm
Towards the palm
Downwards

How are tactile inputs on the hand integrated with proprioceptive signals?
How is this integration controlled by the reference frame?

Human Psychophysics: Proprioception modulates tactile motion perception in a reference frame-dependent manner



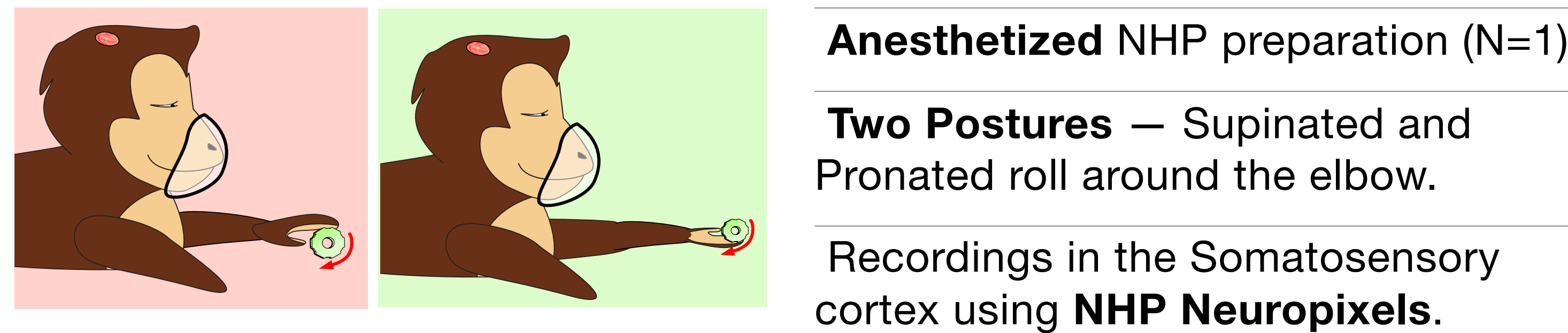
Perceptual tactile motion judgements are explained by a Bayesian generative model



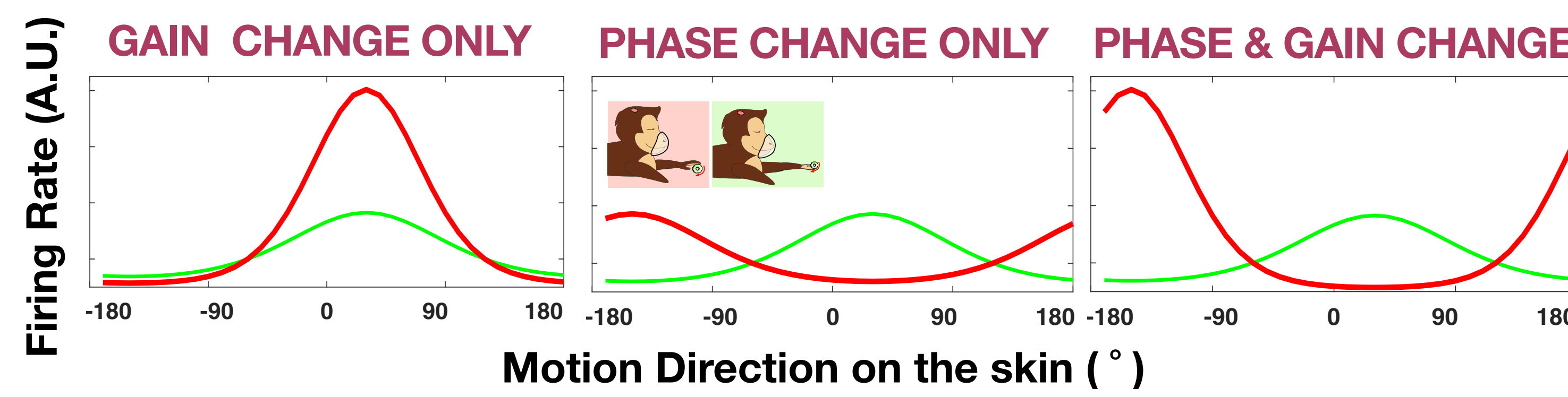
RESEARCH QUESTION

Are tactile-motion direction sensitive neurons in Area 1 modulated by proprioception?
Can these neurons generate readouts in non-skin-centric coordinates?

METHODOLOGY

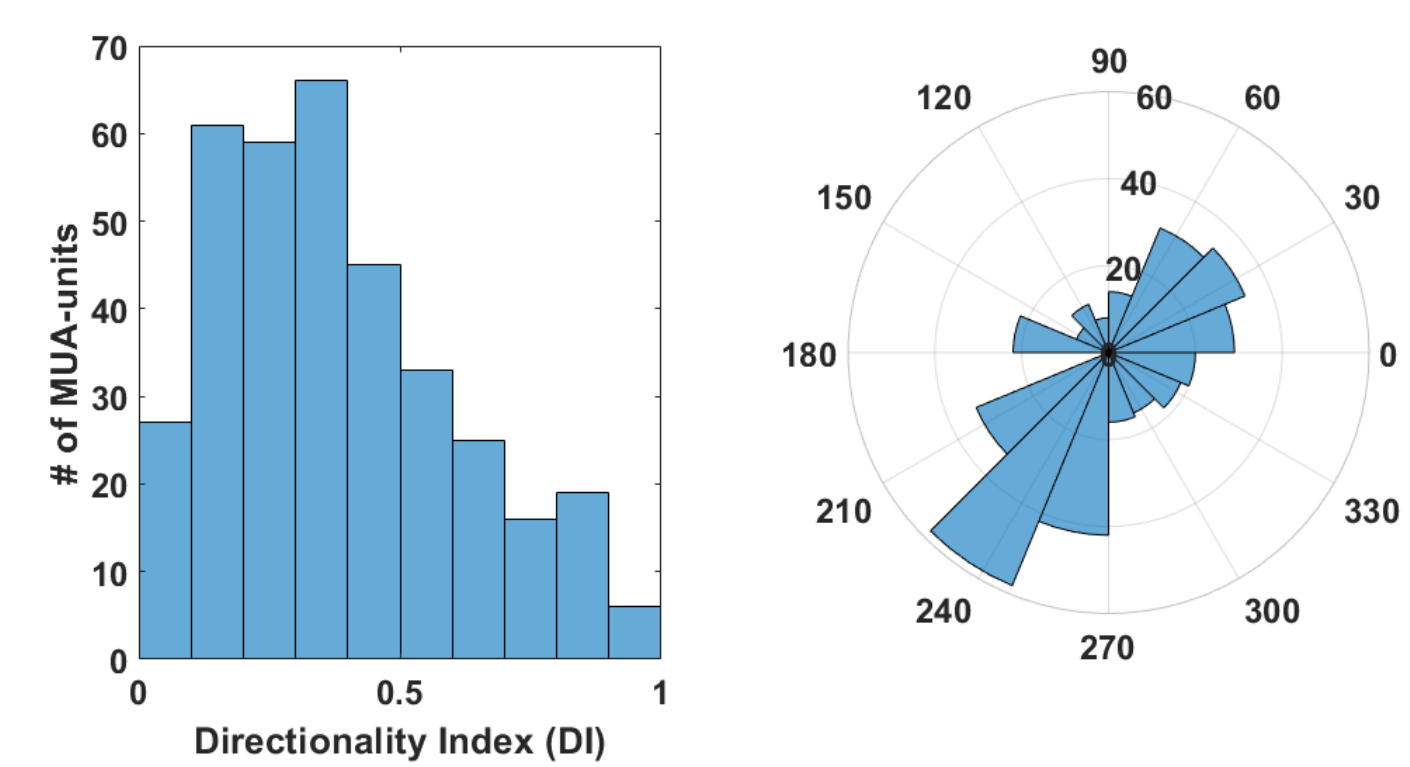


EXPECTED RESULTS

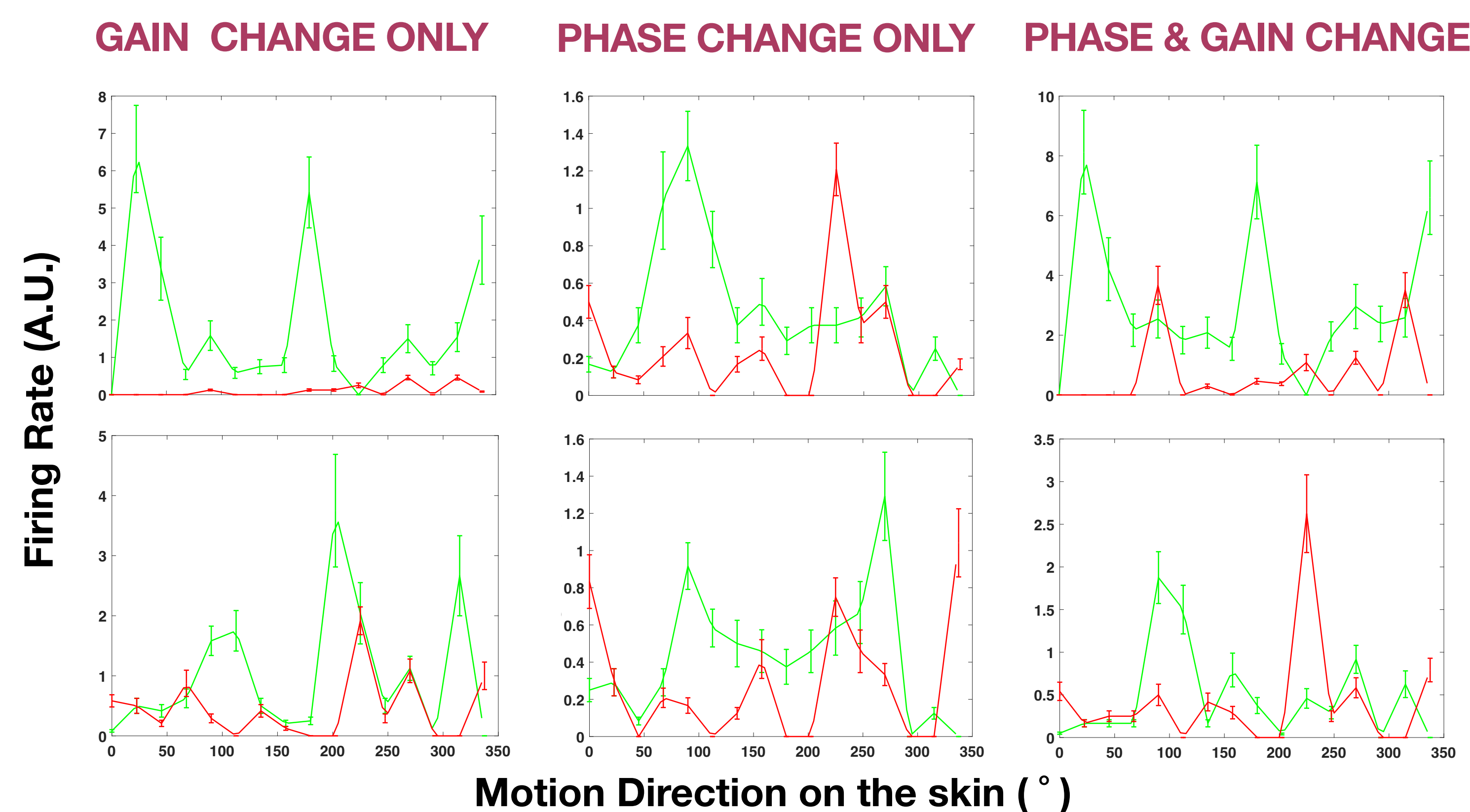


RESULTS

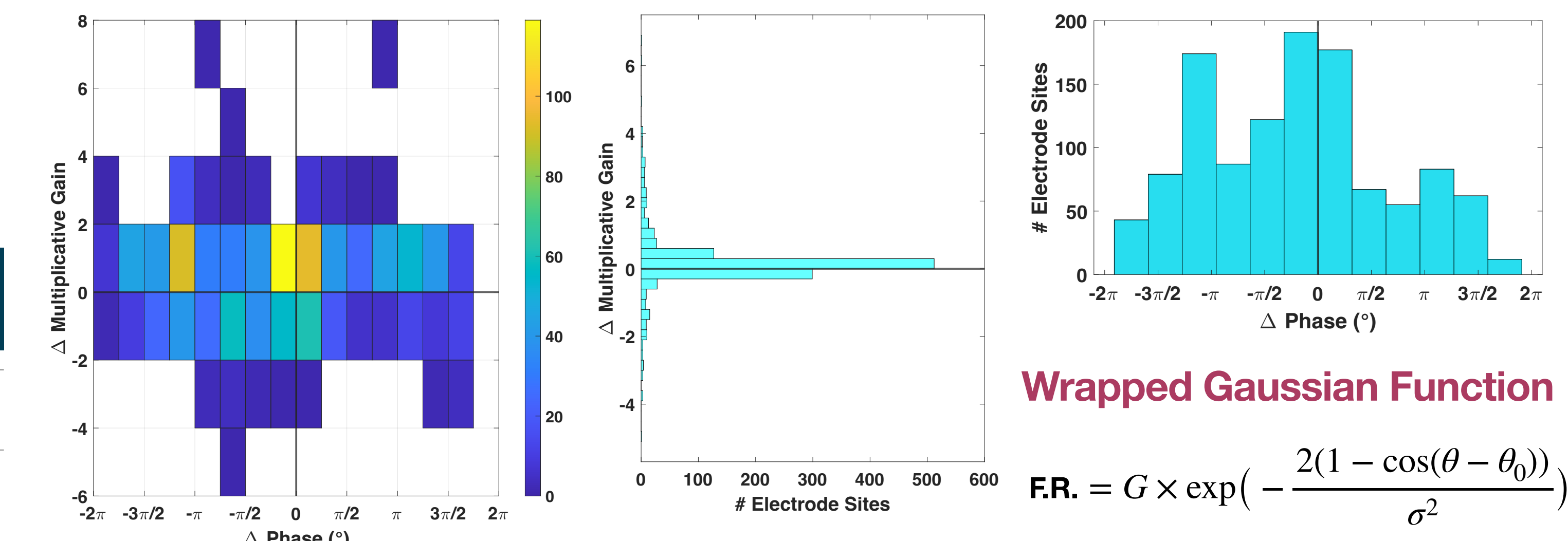
Direction-sensitive neurons are present in the somatosensory cortex



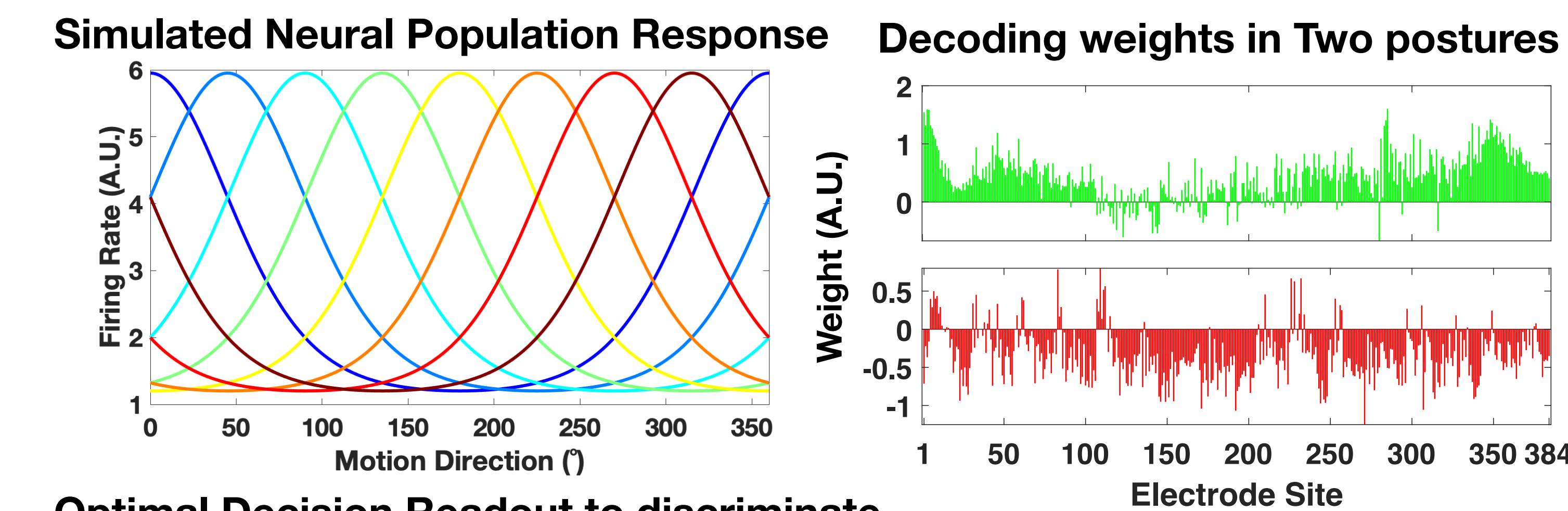
Preliminary Multi-Unit analysis shows posture-based phase-change, gain-change and their combination.



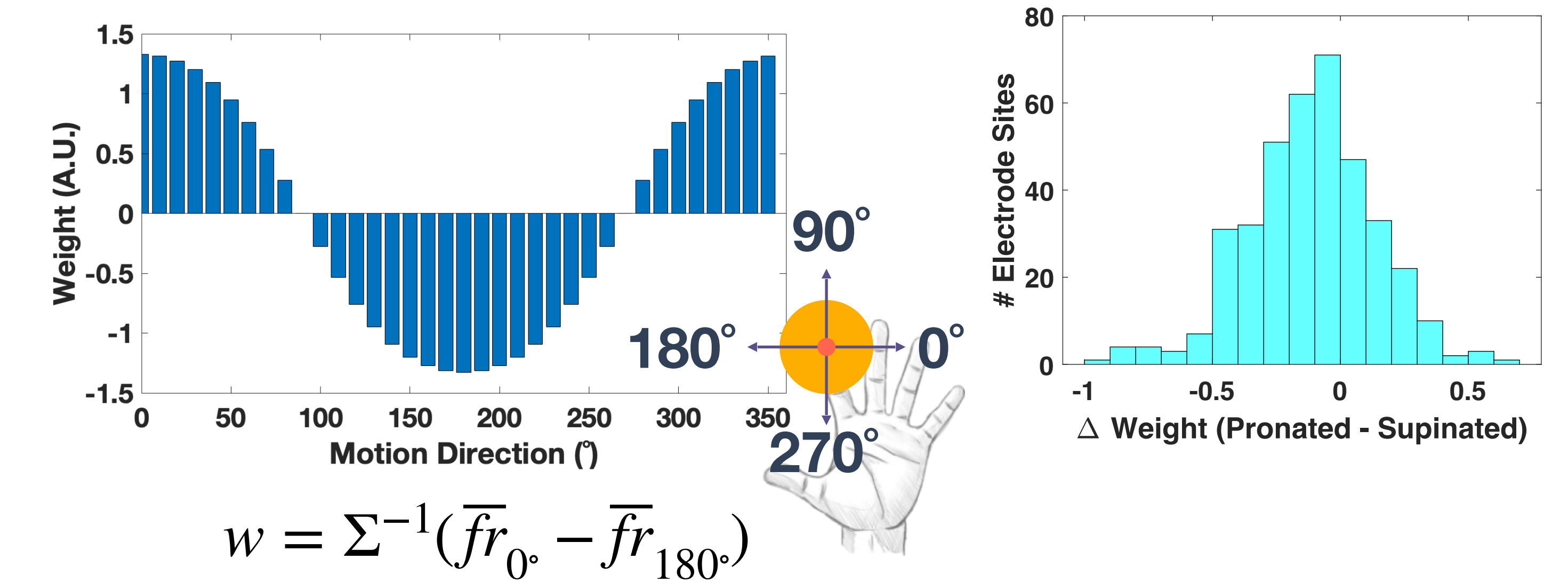
Uniformly distributed phase and gain change patterns across the two posture conditions



Change in decode weights across postures suggests decision readouts in non-skin centric coordinates



Optimal Decision Readout to discriminate opposing stimuli



CONCLUSIONS

- ❖ Direction Sensitive neurons were identified in the somatosensory cortex with preferred direction across the circular range.
- ❖ Multi-Unit-Activity showed a mixture of Phase-change and gain-change activity
- ❖ Change in decode weights across postures suggests decision readouts in non-skin centric coordinates, but is inconclusive for an anesthesia experiment.

ACKNOWLEDGEMENTS



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