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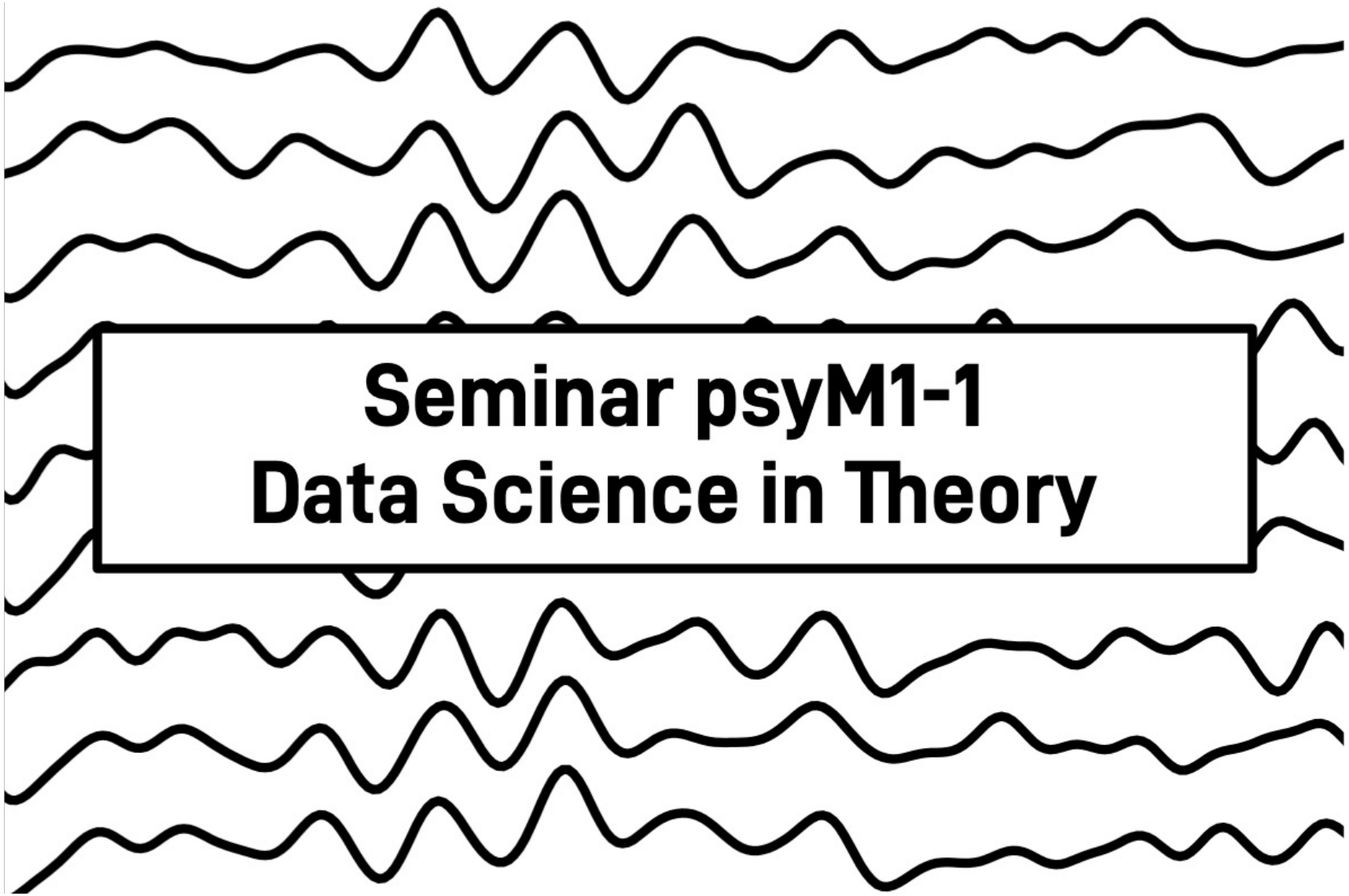

Letzte Woche: Gedankenlesen im Schlaf?

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Neural Decoding of Visual Imagery During Sleep

T. Horikawa,[1,2] M. Tamaki,[1]* Y. Miyawaki,[3,1]† Y. Kamitani[1,2]‡

Visual imagery during sleep has long been a topic of persistent speculation, but its **private nature** has hampered objective analysis. [...] Our findings demonstrate that specific visual experience during sleep is represented by brain activity patterns shared by stimulus perception, **providing a means to uncover subjective contents of dreaming** using objective neural measurement.

- How is neural activity related to **subjective experience** here?
- How is subjective experience **decoded**?
- Is **perception and imagery** the same?

Perzeptuelle Hierarchie

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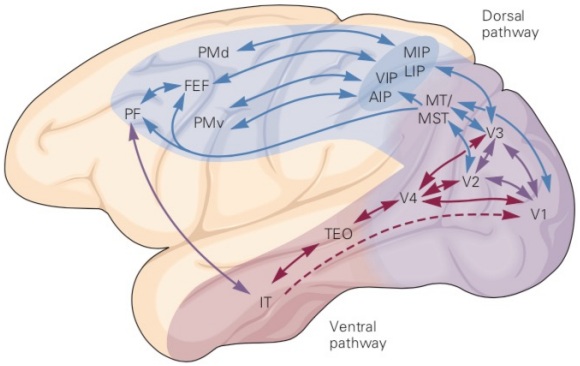
Visuelles System:



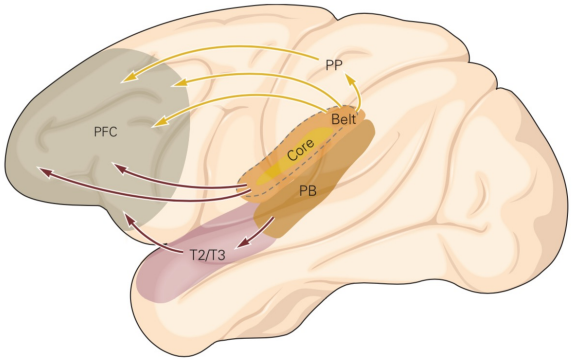
Abstrakt

Kanten
Formen
Objekte
Bewegung

Konkret

Kinematik: Interaktion

Auditorisches System:



Abstrakt

Frequenzen
Geräusche
Phoneme
Silben

Konkret

Kinematik: Sprache

Komplexe Geräusche

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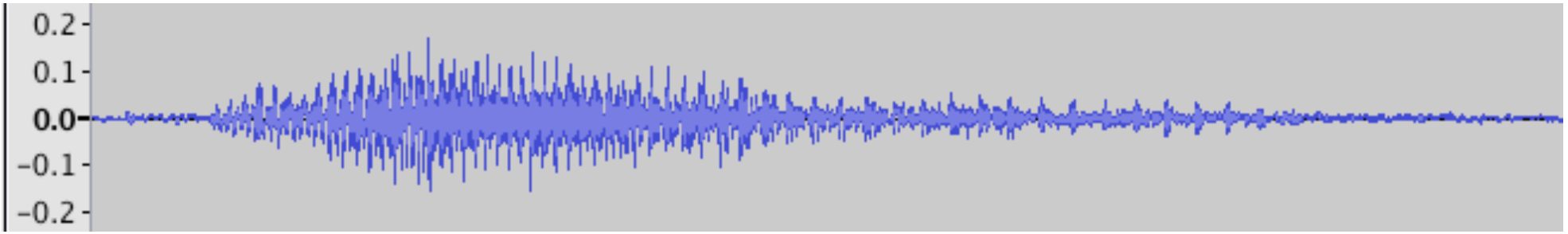

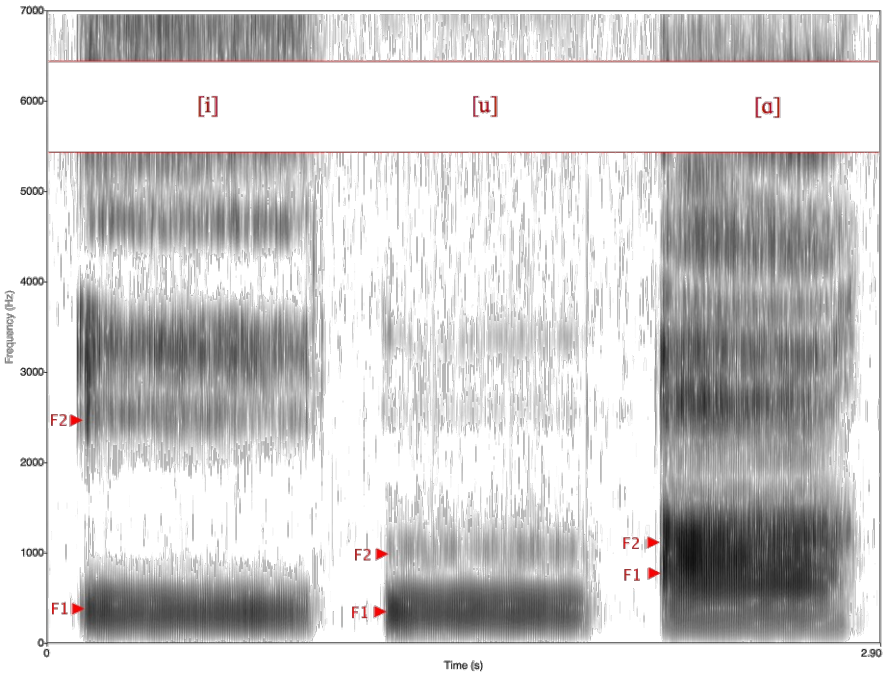

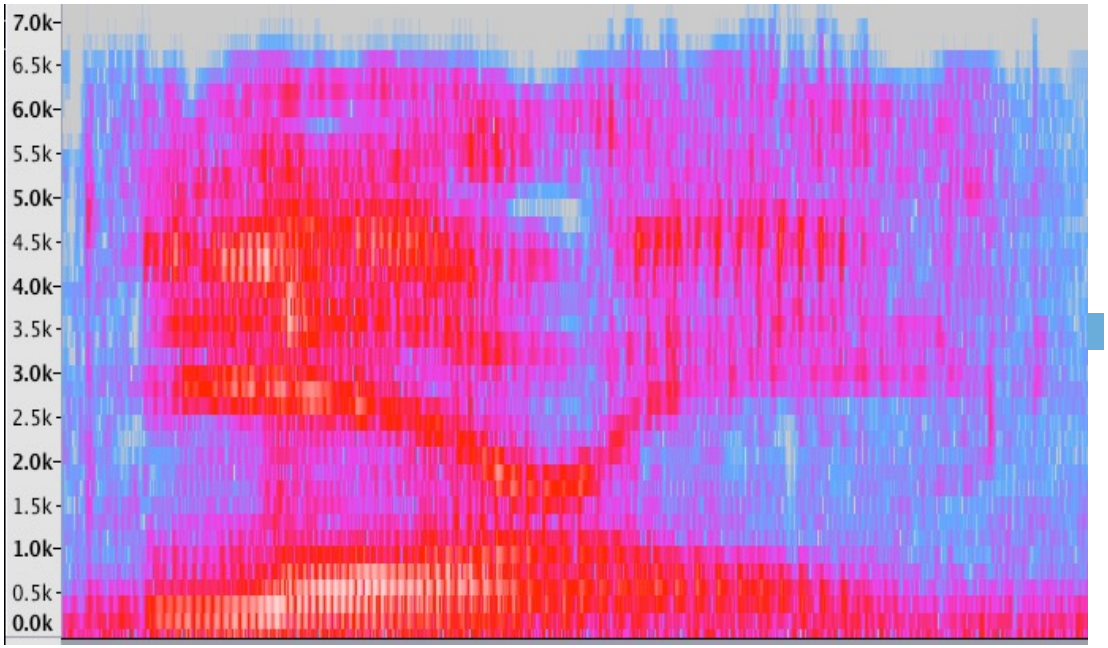

Formant: Frequenzkomponenten eines Signal
-> Gipfel (F1) und Resonanzfrequenzen (F2, F3...)

Diese Woche: Gedanken hören?

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Speech synthesis from neural decoding of spoken sentences

Gopala K. Anumanchipalli[1,2,4], Josh Chartier[1,2,3,4] & Edward F. Chang[1,2,3]*

Decoding speech from neural activity is challenging because speaking requires very precise and rapid multi-dimensional control of vocal tract articulators. Here we designed a neural decoder that explicitly leverages kinematic and sound representations **encoded in human cortical activity to synthesize audible speech.** [...] In closed vocabulary tests, listeners could readily identify and transcribe speech synthesized from cortical activity.

- What cortical areas are relevant for **speech perception and production**?
- How is speech **decoded**?
- How does this compare to BCI?
- What is the role of expectations for speech perception?

https://static-content.springer.com/esm/art%3A10.1038%2Fs41586-019-1119-1/MediaObjects/41586_2019_1119_MOESM3_ESM.mp4

Nächstes Jahr:
Intention vorhersagen?

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ANNALS OF THE NEW YORK ACADEMY OF SCIENCES
Issue: *The Year in Cognitive Neuroscience*

Decoding and predicting intentions

John-Dylan Haynes
Bernstein Center for Computational Neuroscience Berlin, Charité–Universitätsmedizin Berlin, Germany

There has been a long debate on the existence of brain signals that precede the outcome of decisions, **even before subjects believe they are consciously making up their mind**. [...] This suggests that a causal chain of events can occur outside subjective awareness even before a subject makes up his/her mind.

- What is **free will**?
- What **criteria** have to be met for a causal relationship?
- How **good** is the prediction of free choice?

Literatur

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