



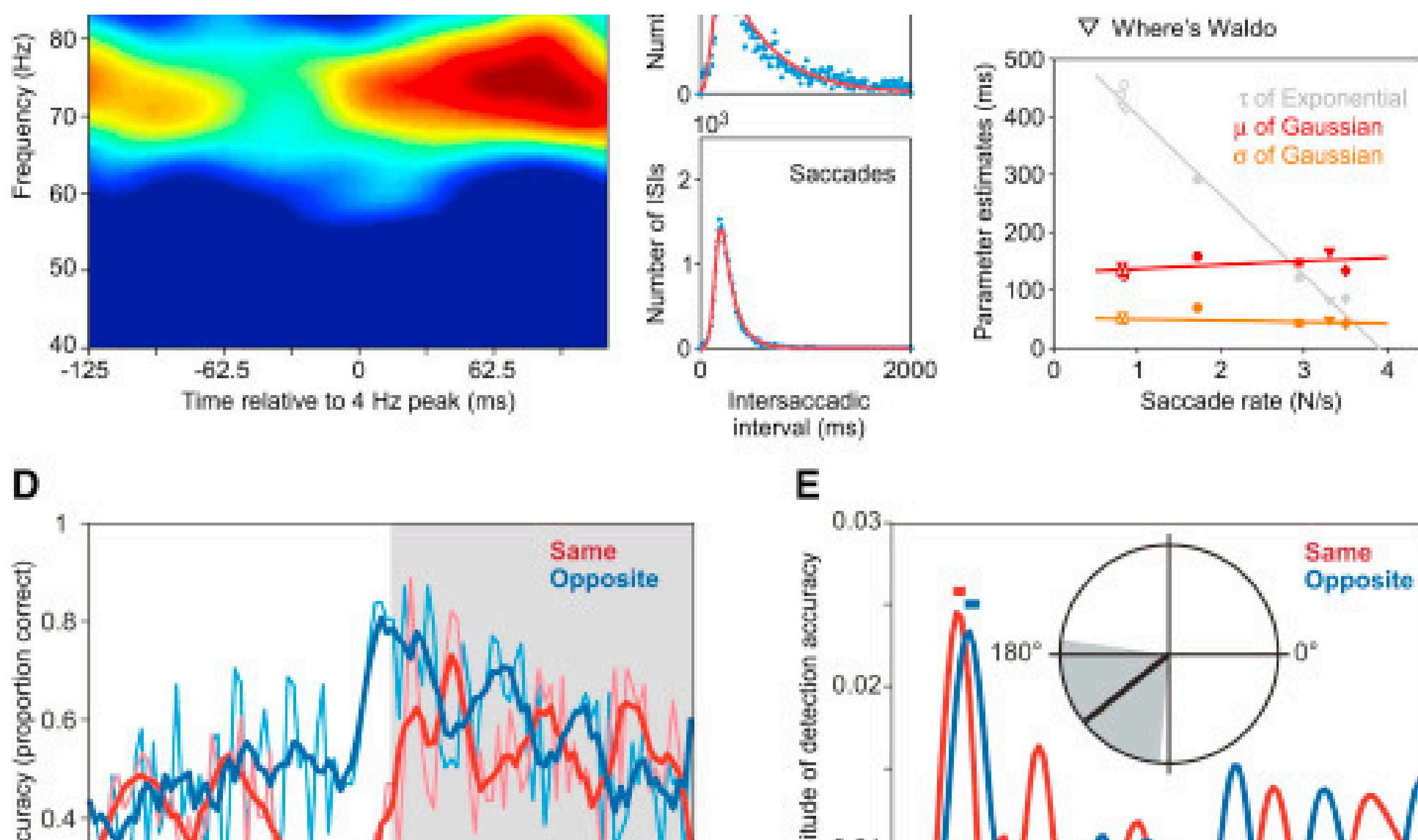
16 MAY 2024, 3:00 PM
SALA SEMINARI VIMM

PNC DISTINGUISHED LECTURES

A talk by Pascal Fries

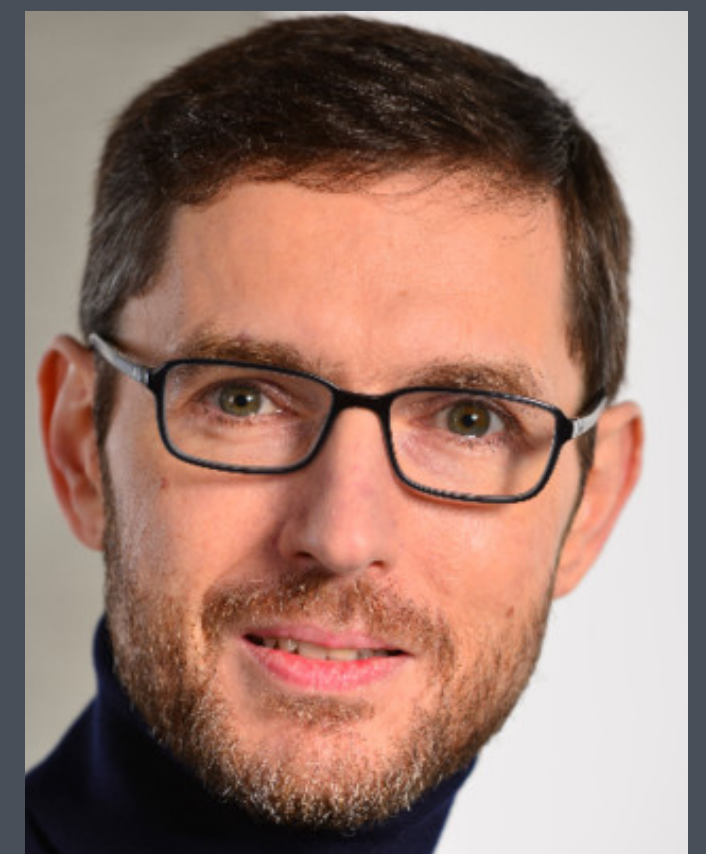
(Max Planck Institute for Biological Cybernetics, Tübingen, Germany)

BRAIN RHYTHMS FOR BOTTOM-UP AND TOP-DOWN SIGNALING



Brain networks typically engage in rhythmic synchronization, and this might serve functions, e.g. the processing of stimuli. I will show that repeated visual stimuli induce decreasing firing rates yet enhanced gamma-band synchronization, likely to maintain postsynaptic impact. This impact is indeed optimal for gamma-rhythmic inputs, as I will show by controlling inputs with optogenetics.

Optogenetics can also be used to control top-down inputs. I will show that this Opto-Top-Down induces strong, up to several fold, changes in gamma-band synchronization together with much smaller changes in firing rate and no correlation between the two effects.



Pascal Fries is professor at the Max Planck Institute for Biological Cybernetics, Tübingen, Germany, and professor of Systems Neuroscience at Radboud University Nijmegen, Netherlands.

His research mainly focuses on the rhythmic neuronal synchronization and its cognitive functions, the selective attention, the stimulus-repetition based learning, in-vivo electrophysiology and optogenetics in awake primates, large-scale high-density electrophysiology with polyimide-based flexible probes, and magnetoencephalography (MEG) and psychophysics in human subjects.