

EEG is a limited window of brain function. Nevertheless, there are predictable patterns seen on EEG recordings which are altered by exposure to non-ionizing electromagnetic fields.

Assemblies of neurons don't speed up and slow down by simple mechanisms. When frequencies change, or the power of a particular frequency is increased or decreased, this means that complex facilitatory and inhibitory behaviors have occurred for a different picture to emerge. While we are understandably concerned with the association of EMF and cancer, frequency alterations may also be highly significant, pointing to involvement of ligand and receptor functions, interneurons, membrane potentials, etc.

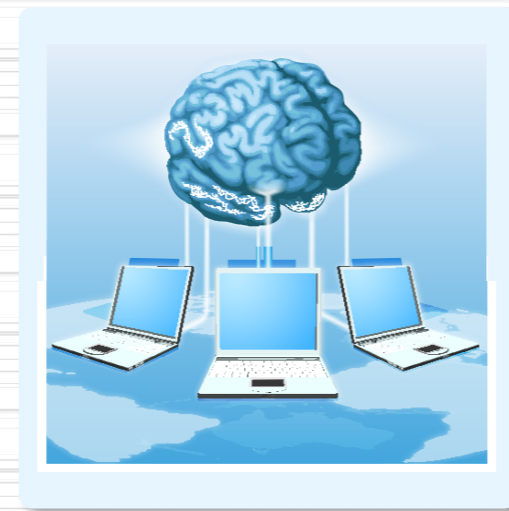
Brain "balance" has evolved over -- how long? Because we don't understand how the brain functions, we cannot interpret with confidence the significance of these responses to EMF.

CELLPHONE USE AND PATHOLOGICAL DELTA

AWAKE EMF EXPOSURE AND CHANGES IN SLEEP STRUCTURE

RESONANCE

MAGNETITE, CRYPTOCHROME, MELATONIN, SCHUMANN RESONANCE, EEG, EMF



EMF: OBSERVATIONS MADE VIA ELECTROENCEPHALOGRAPHY

- Other Effects
- [Randomness increased](#)
 - [Gender basis of changes](#)
 - [Decrease in band coherence](#)
 - [Whole Brain Synchronization RF](#)
 - [Inconsistent results, TETRA and EEG](#)
 - [Peak RF effect depends on site placement](#)
 - [RF effect depends on phone site placement](#)
 - [Changes in interhemispheric synchronization](#)
 - [Power effects, different bands, different SAR](#)

★ **AUTOMOBILE TECH AFFECTS BRAIN WAVES**

MOBILE PHONES WARP BRAIN WAVES

BRAIN RECOGNIZES SUBLIMINAL RF PEAKS

The electrodes couple with RF during experiments, causing thermal ripples. These create a known artifact, but do not explain other RF-EEG effects. Murbach et al

"It is possible to modulate the bioelectric brain activity by microwaves to change the functional state of central nervous system and probably of the whole organism." Sidorenko and Tsariuk

"If the brain were simple enough for us to understand it, we would be too simple to understand it." Ken Hill

Links

- [Nonlinearity](#)
- [Buzsaki Labs](#)
- [EEG SlideShare](#)
- [Rhythms of the Brain](#)
- [EMF and EEG artifacts](#)
- ★ [Spectral coherence, EMF](#)
- [Frequency specific changes](#)
- [Memory is temporally coded](#)

Related Maps



- [EMF and Sleep](#)
- [Brain Oscillations](#)
- [EMF and Memory](#)
- [EMF and the Brain](#)
- [EMF and Thinking](#)
- [EMF, Alzheimer's Disease](#)

"The frequency bands of the various brain oscillators are kept relatively constant throughout mammalian evolution even as the numbers of neurons and their connections have increased enormously." Gyorgy Buzsaki

"Oscillations link neurons in group activity", according to Gyorgy Buzsaki, expert on brain rhythm physiology. A change of the oscillations means a change in group activity.

"EMF emitted by mobile phones has effects on brain oscillatory responses", C.M. Krause et al.

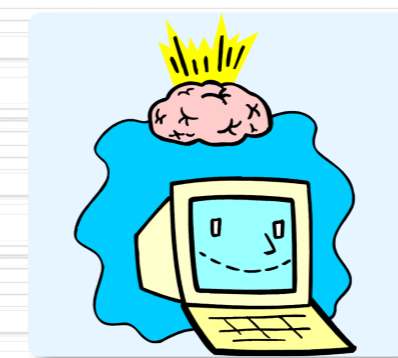
Field Effects

- ELF [Can drive alpha, beta](#)
- [Alpha rhythm moves anterior](#)
- [Frequency specific responses](#)
- [ELF-MF, several rhythm changes](#)
- [ELF pulsed microwaves, cortex-hypothalamus](#)

Mobile phone frequencies

- [Induction of slow waves](#)
- [8 Hz oscillatory changes](#)
- [Sleep physiology effects](#)
- [Alpha band power decrease](#)
- [10.5-11 Hz affect by pulsed RF](#)
- [Pulse, not continuous, RF effects](#)
- [New study, new math, altered EEG](#)
- [Changes during cognitive processing](#)
- [Changes in network firing from GSM signal](#)
- [Alpha and beta changes, 7 of 32 frequencies](#)
- [Wi-Fi, alpha and beta changes, R. ant. and occiput](#)
- [In epilepsy, increased frontal/temporal alpha coupling](#)

TIMING IS EVERYTHING!



- AC magnetic fields [Theta disrupted](#)
- [Human brain sensitive to it](#)
- DC field effects [Move action potential timing](#)

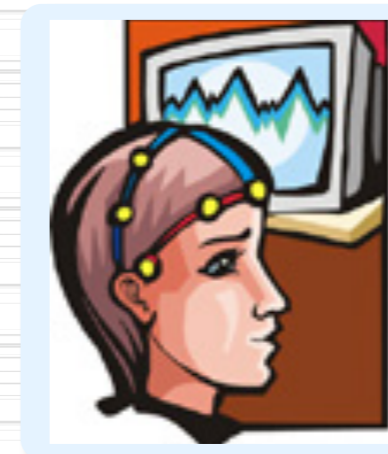
Rhythm Effects

- Delta [Induction of slow waves by cell phones](#)
- Theta [Disruption by AC mag fields](#)
[4-8 Hz. changes by mobile phones](#)
- Alpha [Alpha decrease](#)
[8 Hz oscillatory changes](#)
[Driven by alpha range ELF](#)
[10.5-11 Hz affect by pulsed RF](#)
[Locomotor changes, 8 Hz. stim.](#)
[Ipsilateral power decreased by GSM](#)
[More anterior, less posterior with ELF](#)
[GSM-EMF, alpha spectral band changes](#)
[2 different experiments, 2 different results](#)
[Interhemispheric synchronization affected by GSM RF, increased sleep alpha bands, decreased REM](#)
- Beta [Driven by beta range ELF](#)
[MW, levels of exposure, beta changes](#)
- Gamma [Spike timing changes](#)
- Sleep [Spindle power change](#)
[Disrupted architecture](#)
[Pulsed MF, EEG changes](#)
[Spindle frequency change](#)
[EEG correlation dynamics altered](#)
[Spectral power of spindle changes](#)
[RF, sleep effects, individual variations](#)
[Mobile phones, altered stage R sleep](#)

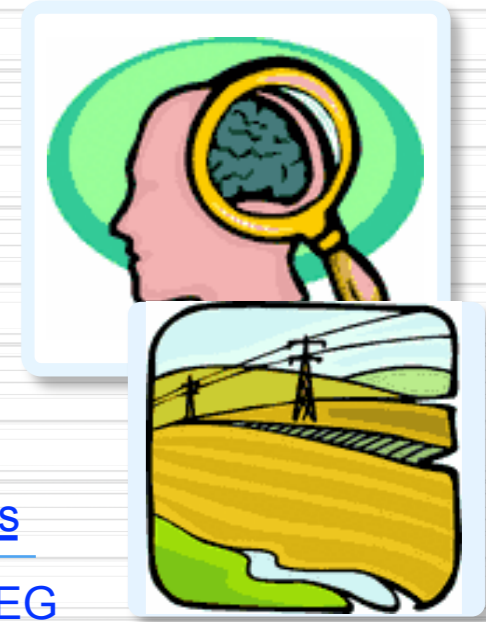
★ **ADDITION OR ENTRAINMENT?**

TETRA AFFECTS EEG VIA VAGUS

MMW EFFECTS DEPEND ON STATE



Home: [Oscillatorium](#)
Newest version [this map](#)
Date of this update: 10-08-18



TEXTING CHANGES BRAIN WAVES