

Citation from the publications of Llinas R; Ribary U

Llinas R; Ribary U

"Coherent 40-Hz oscillation characterizes dream state in humans"

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Magnetic recording from five normal human adults demonstrates large 40-Hz coherent magnetic activity in the awake and in rapid-eye-movement (REM) sleep states that is very reduced during delta sleep (deep sleep characterized by delta waves in the electroencephalogram). This 40-Hz magnetic oscillation has been shown to be reset by sensory stimuli in the awake state. Such resetting is not observed during REM or delta sleep. The 40 Hz in REM sleep is characterized, as is that in the awake state, by a fronto-occipital phase shift over the head. This phase shift has a maximum duration of approximately 12-13 msec. Because 40-Hz oscillation is seen in wakefulness and in dreaming, we propose it to be a correlate of cognition, probably resultant from coherent 40-Hz resonance between thalamocortical-specific and nonspecific loops. Moreover, we proposed that the specific loops give the content of cognition, and a nonspecific loop gives the temporal binding required for the unity of cognitive experience

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