

## The Schumann Resonance as Tau-Cavity Frequency

$7.83 \text{ Hz} \times 5 = 39.15 \text{ Hz} \sim 40 \text{ Hz (Gamma)} \cdot \text{Earth-Ionosphere Tau-Resonator} \cdot$   
 $\text{Lightning Rate} = 2 \times 5^2 \text{ s}^{-1}$

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### P-SCHUM-1 The Earth-Ionosphere Cavity as a Tau-Resonator

The Schumann resonances are extremely-low-frequency (ELF) electromagnetic resonances of the Earth-ionosphere spherical cavity, excited by global lightning activity. The fundamental mode occurs at approximately 7.83 Hz, with harmonics near 14.3, 20.8, 27.3, and 33.8 Hz. In FOT, the Earth-ionosphere system is a Tau-resonator: a spherical standing-wave cavity in the G1 register, bounded below by the conducting Earth surface (Moho register boundary) and above by the ionosphere (G1 upper limit).

#### P-SCHUM-1

The Schumann cavity is the G1 Tau-resonator: the spherical shell between the G0/G1 Moho boundary and the G1/G2 ionosphere boundary. Its eigenfrequencies are the standing-wave modes of the Tau-field in the G1 planetary register.

This framing places the Schumann resonance in the same conceptual category as atomic orbital frequencies (G0/G1 electron register), DNA resonance modes (molecular G1 register), and galactic arm oscillations (G3 register). The same standing-wave mathematics governs all of them — scale invariance is the mechanism, not a metaphor.

### P-SCHUM-2 The 7.83 Hz to 40 Hz Bridge via the Factor 5

The single most important FOT identity linking the Earth's Tau-resonator to the human brain's gamma oscillation is the factor of 5:

$7.83 \text{ Hz} \times 5 = 39.15 \text{ Hz} \sim 40 \text{ Hz (gamma consciousness)} \quad 40 \text{ Hz} / 7.83 \text{ Hz} =$   
 $5.109... \text{ [deviation from 5: 2.2\%]} \quad 5 = \text{fifth prime-lattice member}$

The 2.2% deviation from the exact factor-5 relationship reflects the Radian Veil: both the Schumann fundamental and the gamma band centre are measured values subject to Tau-lattice departures. In exact Tau-units, the relationship is:  $f_{\text{gamma}} = 5 \times f_{\text{Schumann}}$ . This is a FOT prediction. The factor 5 — the same prime that appears in the quark mass tower (Bottom =  $45 \times \text{Strange} = 3^2 \times 5 \times \text{Strange}$ ), the lunar calendar ( $5 \times 73$  days), and the Mariana Trench identity — is the bridge constant between Earth-scale and brain-scale Tau-oscillations.

*The five-fold coupling between Earth cavity and brain gamma is not a metaphysical claim. It is a structural prediction of scale-invariant Tau-lattice dynamics: whenever two Tau-resonators occupy adjacent registers, their eigenfrequencies are related by a prime-lattice factor. The Earth-brain pair is separated by approximately  $10^{10}$  in scale; the bridging prime is 5.*

### **P-SCHUM-3 Lightning Rate = $2 \times 5^2$ per second**

Global lightning activity produces approximately 50 strokes per second, maintaining the Schumann cavity in continuous resonance. This rate is a pure {2,5} lattice value:

$$\text{Global lightning rate} = 50 \text{ s}^{-1} = 2 \times 5^2 \times 2 \times 5^2 = 2 \times 25 = 50$$

In FOT, each lightning stroke is a Tau-discharge event: atmospheric electrical charge separation (Strand 1 / Strand 2 potential difference) is released as a Tau-pulse that excites the G1 cavity. The rate of  $50 = 2 \times 5^2$  strokes per second encodes both the {2,5} lattice and the five-fold coupling constant connecting the cavity to the brain register. The Earth requires exactly this rate of Tau-excitation to maintain a continuous 7.83 Hz standing wave — a prediction testable via correlation of global lightning rate with Schumann amplitude.

### **P-SCHUM-4 Brain-Earth Synchrony — the Tau-Lock Mechanism**

The coupling between the Earth's Schumann resonance and the human brain's gamma oscillation is not merely a frequency coincidence (after the factor-5 correction). It is a Tau-lock: the brain's neural oscillator is coupled to the planetary Tau-resonator through the same H-bond tension mechanism (P-TEQ-2) that synchronises planets in the solar system, scaled down 20 orders of magnitude.

Empirical evidence for the lock: studies show that Schumann resonance fluctuations correlate with human EEG alpha and gamma activity, that meditators in anechoic chambers (electromagnetically shielded) show altered gamma rhythms, and that Schumann amplitude anomalies precede geomagnetic storms by hours — consistent with a Tau-field propagation delay. FOT interprets these correlations as signatures of the 5:1 Tau-coupling, not statistical artefacts.

### **P-SCHUM-5 The Ionosphere as the G1 Upper Register Boundary**

The ionosphere D-layer base (~60-90 km altitude) is not merely a conducting shell for electromagnetic purposes. In FOT it is the G1 upper register boundary — the surface above which the Tau-field density falls below the G1 minimum, transitioning to the G2 interplanetary register. The Schumann cavity height (~90 km) encodes a {2,3,5} value:

$$h_{\text{iono}} = 90 \text{ km} = 2 \times 3^2 \times 5 = 2 \times 45 = 90 \quad 2 \times 3^2 \times 5 = 90 \text{ exactly}$$

90 km is the canonical ionospheric height used in Schumann resonance calculations. The value  $2 \times 3^2 \times 5 = 90$  appears throughout FOT: it is the number of degrees in a right angle (90°), the bond angle of a right-angle Tau-sphere projection, and the G1 cavity height in kilometres. The unit coincidence (degrees = kilometres at this scale) reflects the deep

connection between angular and linear measure in the {2,3,5} lattice.

### P-SCHUM-6 Testable Predictions

Prediction	Measurement needed	FOT quantitative claim
Gamma/Schumann ratio is exactly 5	Precise EEG gamma band centre vs Schumann fundamental	$f_{\text{gamma}} / f_{\text{Schumann}} = 5.000$ +/- Radian Veil
Schumann amplitude correlates with global lightning rate at $50 \text{ s}^{-1}$	Long-term joint monitoring	Rate = $2 \times 5^2 = 50 \text{ s}^{-1}$ is the resonance maintenance rate
Phase coherence between Earth Schumann and Jupiter/Saturn Schumann	Planetary Schumann cross-correlation	Phase offset = light-travel time only (P-TEQ-1)
Deep meditation shifts gamma band to exact 5 x Schumann	Simultaneous Schumann + EEG in open field	Deviations from 5:1 predict Tau-decoherence level

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