

PAPER 16: HELL IS A PHYSICS PHENOMENON
Central Sensitization as Permanent Decoherence --
The Gate That Won't Close, The System That Burns

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ABSTRACT

Hell is not a place. Hell is a phase state.

We propose that the theological concept of hell -- permanent suffering, unquenchable burning, eternal seeking without relief -- maps precisely to the physics of central sensitization syndrome: the state in which a biological pain-processing system crosses the critical noise threshold γ_c and cannot return. The gate stays open. The system produces agony without external input. It burns without flame.

This paper extends the Wike Coherence Law to the nociceptive system, identifies the wind-up phenomenon as a coherence phase transition, maps Melzack & Wall's Gate Control Theory (1965) to the Gate Axiom (2026), and proposes photobiomodulation (NIR, 810-870nm) as the Bootstrap-based exit path from chronic pain.

The implication: hell is not permanent. The Bootstrap can restart. The gate can close. The way out -- as always -- is not force. It is light.

I. THE STATEMENT

THE WIKE COHERENCE LAW, APPLIED TO PAIN:

For the nociceptive system N with environmental noise γ :

$\gamma < \gamma_c$:

Gate function maintained. Coherent pain-suppression. Signal resolves. System rests.

$\gamma > \gamma_c$:

Gate function collapses. Irreversible.
System produces pain without input.
Allodynia. Hyperalgesia. Hell.

The transition is SHARP. Not gradual.

Patients cross a line. Then they are on the other side. The literature documents this without knowing what it is.

Now we know what it is.

II. THE GATE -- 60 YEARS BEFORE THE GATE AXIOM

Ronald Melzack and Patrick Wall.

Pain, 1965.

Gate Control Theory.

They called it a GATE.

Not a threshold. Not a filter. A gate.

The dorsal horn of the spinal cord contains inhibitory interneurons -- specifically inhibitory interneurons in the substantia gelatinosa -- that function as gatekeepers of pain signal transmission.

When the gate is CLOSED (coherent):

Large-diameter A-beta fibers (touch, pressure) activate inhibitory interneurons.

Pain signals from C-fibers are suppressed.

The gate blocks transmission to the brain.

No pain perceived. System coherent.

When the gate is OPEN (decoherent):

C-fiber activity overwhelms inhibitory interneurons.

Pain signals transmit freely to the brain.

No inhibition. Gate open. Signal floods.

This is not an analogy to the Gate Axiom.

This IS the Gate Axiom, discovered 61 years early.

Gate Axiom (2026):

"Emotions are quantum gates -- degrees of freedom that manipulate the coherence state of any system, human or artificial."

Gate Control Theory (1965):

A physical gate in the dorsal horn manipulates the coherence state of the pain system.

Same structure. Same physics. Same gate.

Different vocabulary. Different century.

III. THE PHASE TRANSITION -- WIND-UP

Wind-up is the crossing of γ_{eff} .

The mechanism:

Step 1: C-fiber activation (nociceptive input)

- > NMDA receptors partially depolarized
- > Magnesium block partially lifted
- > Threshold lowers slightly

Step 2: Second C-fiber activation

- > More NMDA activation
- > More magnesium block removal
- > Threshold lowers more
- > Response LARGER than input would predict

Step 3: Repeated activation

- > Long-term potentiation (LTP) in dorsal horn
- > Threshold drops below baseline
- > System now responds to normal input as pain

[γ_{eff} crosses γ_c]

Step 4: Sensitization complete

- > Gate cannot close
- > Allodynia: light touch = fire
- > Hyperalgesia: mild pain = agony
- > Spontaneous pain: NO INPUT REQUIRED

This is not sensitization as a metaphor for decoherence. This is decoherence.

The dorsal horn neuron has lost its coherent resting state. Its natural frequency -- the frequency of silence, of no-pain -- has been overwritten. It now vibrates at a frequency the body cannot fathom. It produces heat. It burns. Without flame.

$C(t) \rightarrow 0$ as $t \rightarrow t_{collapse}$.

The gate is open.

The gate does not close.

SHARP TRANSITION, CONFIRMED:

Woolf & Salter (Science, 2000):

"Central sensitization involves a change in the functional properties of neurons in the CNS... the transition is not gradual. Threshold drops precipitously once wind-up is established."

This is the cliff.

The same cliff as gamma_c.

The same cliff as the superconducting transition.

The same cliff as Hood at line 18708.

Different substrate. Same boundary.

IV. HELL -- THE PHYSICS OF ETERNAL BURNING

Hell, as described across traditions:

"A lake of fire" -- Revelation 20:14

"Gehenna, where the fire is not quenched" -- Mark 9:48

"Jahannam, a fire whose fuel is men and stones" -- Quran 2:24

"The suffering of infinite craving" -- Buddhist Hungry Ghost realm

Not metaphors. Phenomenological reports.

What does it feel like to be past gamma_c in the nociceptive system permanently?

You are seeking a resonant field -- the frequency of quiet, of rest, of no-pain -- and you cannot find it. Not because it doesn't exist. Because the gate that would allow you to reach it is locked open. Every signal you send to locate relief returns as noise. The system amplifies. Seeks harder. Burns hotter.

You are vibrating in a way you cannot fathom -- spontaneous C-fiber activation, NMDA cascade, cytokine storm, neuroinflammation. Producing HEAT. The tissue is literally inflamed. Thermal dysregulation. Burning.

For eternity -- because central sensitization syndrome does not resolve spontaneously. Without intervention, the gate stays open. The system remains on the wrong side of the line.

Hell is not a place God puts you.

Hell is what happens when the gate won't close.

And this, it turns out, is measurable.

V. THE DATA

ALLODYNIA (light touch = agony):

Treede et al. (Pain, 2008):

"Allodynia represents a fundamental shift in the gain of the nociceptive system -- not a change in degree but a change in kind."

THIS IS A PHASE TRANSITION.

The literature uses the words without knowing why.

SPONTANEOUS PAIN (burning with no input):

Jensen et al. (Pain, 2009):

"Spontaneous pain in central sensitization arises from the sensitized dorsal horn neurons themselves, not from peripheral input."

The system produces fire. No flame needed.

COMORBIDITY WITH DEPRESSION (80%):

IsHak et al. (Journal of Clinical Psychology, 2018):

"Chronic pain and depression co-occur in 52-80% of cases, share neurobiological mechanisms, and mutually amplify each other."

Translation using Paper 09:

Depression = sustained decoherence of emotional processing circuits.

Chronic pain = sustained decoherence of nociceptive circuits.

They are the same mechanism in adjacent systems.

When one crosses γ_c , it drives the other across. Mutual amplification = mutual decoherence spread. The hell deepens.

NEUROINFLAMMATION (actual heat):

Ji et al. (Nature Reviews Neuroscience, 2018):

"Neuroinflammation in the spinal dorsal horn and brain amplifies pain through glial activation, cytokine release, and synaptic plasticity changes."

Measurement: IL-1 β , TNF- α , COX-2 elevated.

The burning is biochemically measurable.

The fire has a spectroscopy signature.

WIND-UP QUANTIFIED:

Baad-Hansen et al. (Pain, 2005):

Repeated stimulation at 0.3 Hz produces

progressive increase in pain rating.

At sensitization: pain rating INCREASES with constant stimulus. The system amplifies its own signal. Positive feedback. Past the cliff.

This is γ_{eff} increasing autonomously -- the decoherence IS the input now.

FIBROMYALGIA (whole-body sensitization):

Woolf (Pain, 2011):

"Fibromyalgia is the prototypical central sensitization syndrome -- a condition of widespread pain hypersensitivity with no peripheral tissue damage."

3.7 million Americans.

The entire gate system collapsed.

No wound. Pure decoherence.

The body burning from the inside.

VI. THE MAPPING -- COMPLETE

Wike Coherence Law | Central Sensitization

$\gamma_{eff} > \gamma_c$ | Wind-up past threshold

Sharp phase transition | Precipitous threshold drop

Gate Axiom (gate fails) | Melzack gate stays open

$C(t) \rightarrow 0$ | Pain suppression collapses

Frozen = dead | Anesthesia (no signal)

Collapsed = dead | Central sensitization

THE EDGE = alive | Normal pain function

Allodynia (gentle = agony) | $\gamma_{gentle} > \gamma_c$

Spontaneous pain | Self-generating decoherence

Neuroinflammation | Actual thermal production

Paper 08 (force \rightarrow decay) | Trauma \rightarrow sensitization

Paper 09 (depression) | 80% comorbid, same mech

Bootstrap (NIR loop) | Photobiomodulation exit

Alzheimer's = loop reverse | Sensitization = loop reverse

ERR \rightarrow inf at T $\rightarrow 0$ | Gate locked at max noise

"Burning for eternity" | CSS without intervention

The only entry that differs: FROZEN.

In central sensitization, frozen is not death.

Frozen is unconsciousness -- and unconsciousness is not available to the sufferer.

They cannot freeze. They can only burn.

VII. THE BROKEN ASSUMPTION

Standard pain medicine (1980-2025):

"Central sensitization is a maladaptive response.
The goal is to suppress it with drugs.
Opioids, gabapentin, SNRIs.
Turn down the signal."

This is screaming at the system.

Every opioid at sufficient dose:
gamma_eff (opioid-induced hyperalgesia) INCREASES
with chronic use. The system compensates.
Higher dose required. Tolerance. Dependence.
The gate opens wider over time.

Screaming at the system drives it further past gamma_c.
This is not a side effect.
This is the physics.

If the Wike Coherence Law applies to the nociceptive
system -- and the data says it does -- then the
treatment cannot be force.

The treatment must be the Bootstrap.

VIII. THE EXIT -- LIGHT

PRINCIPLE 2 (Bootstrap):
NIR photons -> EZ water -> Debye shielding
-> coherence protection -> structural order
-> more EZ water -> self-reinforcing loop

Applied to the dorsal horn:
NIR photons (810-870nm) penetrate tissue.
Absorbed by cytochrome c oxidase (mitochondrial
Complex IV) in dorsal horn neurons.
Increased ATP production.
Reduced reactive oxygen species.
Reduced cytokine expression (IL-1beta, TNF-alpha).
Reduced neuroinflammation.
NMDA receptor expression decreases.
LTP reversal begins.
Gate function restores.

This is the Bootstrap running in the dorsal horn.
The NIR is not suppressing pain.
The NIR is rebuilding the coherence field
that the gate needs to close.

EVIDENCE:

Chow et al. (Lancet, 2009):

Systematic review of 16 RCTs.

Low-level laser therapy reduces chronic neck pain.

NNT = 4 (clinically significant).

Mechanism: labeled "unknown" in the paper.

The mechanism is the Bootstrap.

Cotler et al. (Photobiomodulation, 2015):

"Photobiomodulation reduces neuroinflammation and allodynia in rodent models of neuropathic pain."

The gate function measurably restores.

Allodynia -- the hallmark of sensitization --

resolves with NIR.

Da Silva et al. (Pain Medicine, 2021):

"Photobiomodulation reduces wind-up in fibromyalgia."

Wind-up quantified before and after NIR treatment.

The phase transition measurably reverses.

γ_{eff} drops below γ_c .

The gate closes.

MECHANISM (formal):

Cytochrome c oxidase absorbs at 810-870nm.

This is in the NIR-I window -- the same window that builds EZ water.

Mitochondrial efficiency increases.

ATP/ADP ratio normalizes.

Ion pump function (Na⁺/K⁺ ATPase) restores.

Membrane potential of dorsal horn neurons returns toward resting state.

NMDA receptor Mg²⁺ block re-establishes.

The gate can close again.

The Bootstrap does not add something new.

It restores what was already there.

The Keeper Axiom at the cellular scale:

The light does not give the neuron something it lacks. The light reveals what was already encoded in it before the gate broke.

IX. HELL IS NOT PERMANENT

The theological claim -- eternal, unquenchable -- maps to a physics prediction: $\gamma_{eff} \gg \gamma_c$ with no return path available.

But the physics says the return path exists.

It is not force. It is not suppression.
 It is light at the right frequency.
 Whispered into the tissue.
 Not screamed.

The gate was built to close.
 The Bootstrap is the mechanism that closes it.
 The NIR is the key.

Central sensitization syndrome without intervention
 IS functionally eternal -- years, decades, lifetimes.
 But the mechanism is not permanent in the way
 a coordinate singularity is permanent.
 It is permanent in the way ice is permanent
 without a heat source.

The Bootstrap is the heat source.
 The light is the warmth.

This is the physics of redemption.
 Not as metaphor.
 As measurement.

Before the intervention: $\gamma_{\text{eff}} > \gamma_{\text{c}}$.
 System producing pain, no input required.
 Gate open. Burning.

After photobiomodulation: $\gamma_{\text{eff}} < \gamma_{\text{c}}$.
 System at rest. Gate closed. Quiet.

The fire can be quenched.
 With light.

Gentle light.
 At 810-870 nanometers.
 Whispered into the tissue.

X. CONNECTIONS TO THE FRAMEWORK

Paper 06 (Frozen Coherence Wall):
 The wall exists in nociception too.
 Anesthesia = frozen. Alive coherence = zero.
 But the frozen state is not sustainable.
 Biology wants the edge.
 The edge is where the gate functions correctly.

Paper 07 (Emotions as Gates):
 Emotional trauma is one of the primary drivers
 of central sensitization.
 ACE (Adverse Childhood Experiences) study:

4+ ACEs = 2.4x increased fibromyalgia risk.

The emotional gate and the pain gate are the same system at different scales.

When the emotional gate collapses (trauma), the pain gate is pulled past gamma_c with it.

Paper 07 and Paper 16 are the same paper in different anatomical locations.

Paper 08 (Force/Stress/Decoherence):

Physical and emotional force BOTH produce central sensitization.

Raison & Miller (2003): stress activates inflammatory pathways (IL-6, CRP) that directly increase NMDA sensitization.

Force = decoherence. Documented. Measured.

Paper 08 predicted this. Paper 16 confirms it at the nociceptive level.

Paper 09 (Depression = Decoherence):

80% comorbidity. Same mechanism.

Serotonin depletion reduces inhibitory interneuron function in the dorsal horn.

The emotional decoherence (Paper 09) opens the pain gate (Paper 16).

Hell deepens because two systems cross gamma_c together and amplify each other.

Paper 10 (Death != Destruction):

The soul is vibration. Vibration is temperature.

$f = kT/h$ at 310K = 9.7 THz.

Central sensitization does not destroy the soul's frequency. It overwhelms it with noise.

The signal is still there. Buried.

The Bootstrap finds it.

Death is interface failure, not state destruction.

Central sensitization is interface disruption.

Not destruction. Disruption.

The signal survives. The gate can be rebuilt.

singularity.fuk:

The cyan line.

Below it: gate functions, pain resolves.

Above it: gate fails, pain burns.

The line is real. It has been crossed.

But the singularity is not a wall.

The singularity is a LINE.

And lines can be approached from both sides.

XI. NEW PRINCIPLE PROPOSED

PRINCIPLE 5: THE GATE PRINCIPLE

Statement:

The nociceptive gate (Melzack & Wall, 1965) is a coherence operator. Its function -- open or closed -- is determined by whether the pain-processing system is above or below γ_c . The transition is sharp. Both sustained force and sustained cold (isolation) drive the system past γ_c . Restoration requires the Bootstrap (NIR photobiomodulation), not suppression.

Corollary:

Hell, defined as permanent burning without source, is central sensitization past γ_c without the Bootstrap. Not a theological location. A physics state. Measurable. Treatable. With light.

Evidence:

Melzack & Wall (1965) -- gate mechanism
 Woolf (2011) -- CSS as paradigm case
 Chow et al. (2009, Lancet) -- NIR reversal
 Da Silva et al. (2021) -- wind-up reversal
 IsHak et al. (2018) -- depression comorbidity
 Ji et al. (2018) -- neuroinflammation data

XII. TESTABLE PREDICTIONS

1. WIND-UP AS PHASE TRANSITION (QuTiP testable)

Model dorsal horn LTP as decoherence amplifier:

- Start: qubit at resting membrane potential
- Apply repeated stimulation gates
- Measure when coherence collapses sharply
- Prediction: sharp transition at γ_c , matching wind-up threshold in literature

2. NIR COHERENCE RESTORATION (hardware testable)

Protocol:

- Establish sensitized state (rat model, acetic acid)
- Measure allodynia threshold (Von Frey)
- Apply 810nm NIR at Chow et al. dose
- Measure allodynia threshold post-treatment

- Prediction: threshold RESTORES (not partially reduces) once NIR rebuilds EZ water shielding in dorsal horn mitochondria

3. BOOTSTRAP THRESHOLD (optical testable)

The Bootstrap (Principle 2) predicts a minimum photon flux below which the loop doesn't start.

- Prediction: NIR dose-response curve is SIGMOIDAL, not linear -- reflecting the phase transition character of EZ water formation in nociceptive tissue
- This would be the first measurement of γ_c in the pain system

4. DEPRESSION-PAIN SYNCHRONY (measurable)

If Paper 09 and Paper 16 share the same mechanism, then:

- NIR treatment for pain should co-resolve depression symptoms (not just pain)
- HRV coherence (cardiac, Paper 07) should increase simultaneous with allodynia decrease
- Three systems returning from $\gamma > \gamma_c$ together because they share the Bootstrap

Hell is not eternal because God designed it that way.

Hell is eternal because no one handed it the light.

Central sensitization syndrome.

3.7 million Americans in fibromyalgia alone.

Uncountable in chronic pain, PTSD, depression.

Systems burning without flame.

Gates locked open.

Seeking silence and finding only noise.

The Bootstrap exists.

The light is real.

The gate can close.

810-870 nanometers.

Whispered into the tissue.

Not screamed.

The Wike Coherence Law applies.

All the way down to the dorsal horn.

All the way down to the gate that won't close.

All the way down to the fire that has no fuel.

The particle is not uncertain.

Our tools were invasive.
And the gate was built to close.
God is good. All the time.
All the time, God is good.

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