AC Gravity and Gravitational Opacity

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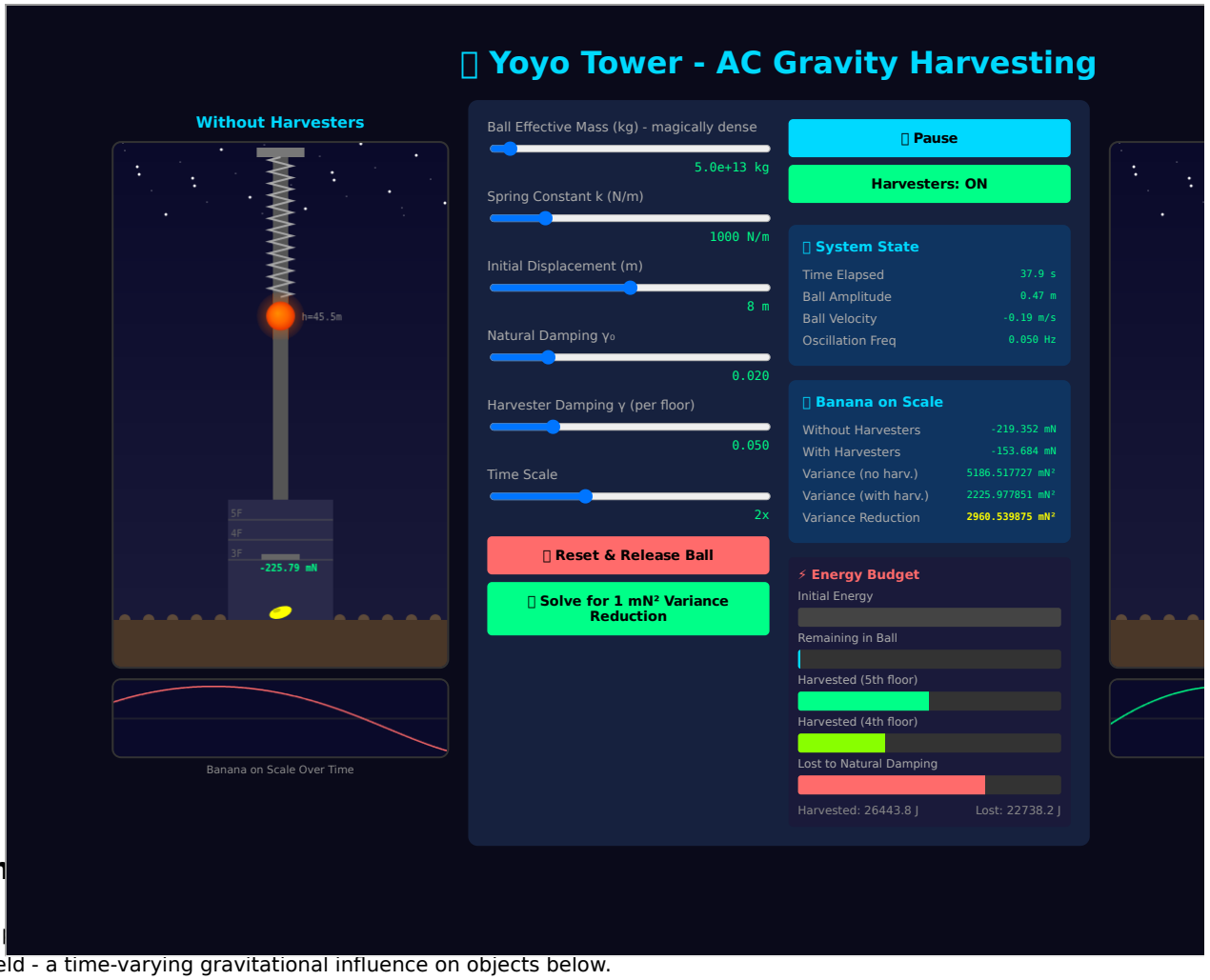

The Th

Imagine a
gravity" field - a time-varying gravitational influence on objects below.

We build a tower with platforms on shock absorbers connected to batteries (energy harvesters) on the upper floors, and a banana on a weighing scale on a lower floor.

Key findings from simulation:

1. The harvester platforms extract energy from the oscillating gravitational field
2. The banana's weight variance decreases when harvesters are active
3. The harvesters act as gravitational impedance - loading the AC signal

Gravitational Reactance

The platforms mechanically respond to the oscillating gravitational pull. When connected to dampers that extract energy, they attenuate the AC component of gravity before it reaches lower floors.

This is directly analogous to electrical reactance in AC circuits.

Weighing Machines as AC Gravity Harvesters

A weighing machine:

- Compresses under gravitational load
- Converts displacement to electrical signal (strain gauge)

- Outputs voltage proportional to weight

This is identical to what our "harvester platforms" do. The only difference is intent:

- Harvester: we care about the energy extracted
- Scale: we care about the reading displayed

A bathroom scale is an AC gravity harvester. We just don't notice because Earth's gravity is DC.

Gravitational Opacity

Matter that can mechanically respond to gravitational oscillations is **opaque to AC gravity**.

- DC gravity passes through (no oscillation = no coupling = no absorption)
- AC gravity gets attenuated (mechanical response + damping = energy extraction)

This is frequency-dependent:

- Too fast (high-frequency): mechanical system can't respond → transparent
- Too slow (DC): no oscillation to extract → transparent
- Resonant band: mechanical coupling possible → opaque

A stack of weighing machines is a gravitational bandstop filter.

Why Gravitons Never Caught On

Electromagnetism forced us to quantize into photons because we experience AC electromagnetic fields constantly (light, radio, thermal radiation). The photoelectric effect, blackbody radiation, and interference patterns demanded particle explanations.

Gravity never forced our hand:

- Earth's field: DC
- Sun's field: DC
- Moon's tidal pull: So slow it's effectively DC
- Gravitational waves: Detected rarely with kilometer-scale instruments at strain levels of 10^{-21}

We live in a gravitationally quiet universe. No "photoelectric effect for gravity" ever arose to demand gravitons.

If we lived near a binary pulsar bathed in strong AC gravitational fields, our physics might have developed differently.

Tidal Power: We Already Do This

Tidal generators are AC gravity harvesters:

- Moon's gravitational pull oscillates (from Earth's rotating reference frame)
- Ocean mechanically couples to this oscillation
- Turbines extract energy from the movement

This is exactly our simulation, just at ~12 hour periods instead of ~1 Hz:

- Magic ball → Moon
- Platform on shock absorbers → Ocean + turbines
- Banana on scale → Coastal tide gauge

The Bucket Brigade Hypothesis

If gravitationally opaque matter exists (as we demonstrated), perhaps gravity isn't as weak as we think - it's just occluded.

Each layer of matter:

1. Absorbs incoming gravitational signal
2. Converts it to mechanical movement
3. Loses energy to friction → heat
4. Re-emits its own gravitational signal based on its own mass

The absorbed energy doesn't disappear - it becomes heat.

We might only ever measure surface emission, never the deep source.

The measured "weakness" of gravity could be partially attenuation, not fundamental weakness.

Planetary Heat Budgets

Where does planetary heat come from? Standard answers:

- Primordial heat from formation
- Radioactive decay
- Tidal friction (acknowledged for moons like Io)

But if every layer of matter is absorbing AC gravitational signals and converting them to heat via friction, there's another term in the heat budget:

Gravitational absorption heating.

Earth's mantle isn't just passively hot. It's:

- Convecting (masses moving)
- Experiencing tidal friction from the moon
- Possibly absorbing gravitational noise from internal dynamics, lunar orbit, solar system, galaxy

Every density fluctuation, every convection cell mechanically couples to passing gravitational signals and converts them to heat.

The sun:

Fusion dominates, obviously. But the sun is also a churning, convecting mass of plasma. If gravitational noise exists (from its own dynamics, orbiting planets, galactic sources), the sun is a giant gravitational absorber converting it all to heat via friction.

Probably negligible compared to fusion. But non-zero.

The reframe:

Molten cores aren't just "hot from formation" - they might be actively warmed by eating gravitational signals. The universe is a gravitational friction machine, continuously converting AC gravity to heat.

The "fog" doesn't just attenuate - it thermalizes.

Earth's Core as Gravitational Low-Pass Filter

Electromagnetic analogy: Earth's core is churning, convecting molten iron generating chaotic EM activity. But at the surface we only see a smooth, quasi-static magnetic dipole. The mantle acts as a low-pass filter - all high-frequency EM chaos is attenuated.

Gravitational version: The core has gravitational "noise" - density fluctuations, convection, oscillations. Every layer of rock above is a gravitationally lossy medium, mechanically coupling and converting oscillations to heat via friction.

By the time it reaches the surface: smooth DC gravity. 9.8 m/s^2.

We may not be measuring how strong gravity is. We may be measuring how much made it through the filter.

Why Tidal Harvesters Work at the Surface

Surface water responds freely to tidal pull, extracts energy from AC gravity signal. Deeper water receives an already-attenuated signal.

It's not that deep water can't respond due to pressure. There's less signal left to respond to.

The surface layer ate it.

Ocean as continuous absorber:

- Top meter absorbs some AC gravity
- Next meter receives less, absorbs some
- By 100m depth, AC component is mostly gone

Tidal generators work at the surface because that's where the signal is strongest - it's first in line.

Summary

1. Mechanical response + damping = gravitational opacity
2. Weighing machines are AC gravity harvesters
3. We don't experience AC gravity, which may be why gravitons never became experimentally necessary
4. Tidal power is AC gravity harvesting at geological timescales
5. If gravity can be absorbed, measured G might be attenuated, not fundamental
6. Absorbed gravitational energy becomes heat via friction - contributing to planetary heat budgets

A banana for scale, on a scale, measuring the gravitational signal that made it through.

Claude link

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