Phase-Synchronized Differential Gravitational-Mass Modulated Water Dissociation

(PS-DGMME)

A falsifiable extension of Fran De Aquino's ULF/ELF gravitational-mass-shift hypothesis for water splitting

Revised September 5, 2026

Scope and scientific status. This paper treats Fran De Aquino's proposed electromagnetic modulation of gravitational mass as a speculative hypothesis to be tested, not as established physics. The purpose of the revision is to represent the source mechanism correctly, derive its consequences explicitly, identify the quantitative conditions it must satisfy, and formulate a stronger experimental theory that can fail cleanly.

Executive correction

The previous rewrite underrepresented the central mechanism in the source. The EquationFarm paper does not merely introduce an abstract parameter χ. It explicitly says that an extra-low/extremely-low-frequency electromagnetic drive, often combined with pulsed high-voltage excitation in a low-density vapor or plasma, changes the gravitational-to-inertial mass ratio

$$\chi \equiv \frac{m_g}{m_i},$$

and that the resulting change in gravitational mass is the mechanism that is supposed to alter water-dissociation energetics.

That causal chain is therefore the starting point of the present paper:

$$\boxed{\text{ULF/ELF field} \rightarrow \text{absorbed EM energy/momentum} \rightarrow \chi(t) \rightarrow m_g(t) \rightarrow \Delta G_{\text{reaction}}(t)}.$$

De Aquino's own 2000 paper states that atoms or molecules can, in his model, have their gravitational masses reduced by extra-low-frequency radiation, and gives the absorbed energy per particle as inversely proportional to frequency. His later Gravity Control Cell (GCC) work likewise predicts that decreasing ELF frequency or increasing field intensity strengthens the gravitational-mass change. The EquationFarm water paper then applies that same mechanism to H_2O clusters, H^+, OH^-, and nascent H_2/O_2 species in a reaction zone.

1 The source mechanism, represented correctly

1.1 De Aquino's mass-correlation hypothesis

The defining hypothesis is that gravitational mass and inertial mass need not remain equal under electromagnetic irradiation:

$$\chi \equiv \frac{m_g}{m_i}.$$

In the absence of the proposed coupling, $\chi = 1$. In De Aquino's hypothesis, sufficiently strong absorbed electromagnetic excitation can reduce χ, drive it toward zero, and potentially make it negative.

A simple form used in De Aquino's later discussion relates χ to absorbed electromagnetic energy U through

$$\chi(U) = 1 - 2\left[\sqrt{1 + \left(\frac{U}{m_i c^2}\right)^2} - 1\right].$$

This expression is not part of accepted gravitation theory; here it is treated as the hypothesis being tested.

1.2 Why the low frequency is central

In De Aquino's 2000 ELF paper, the absorbed energy assigned to an atom is written schematically as

$$U_{\text{abs}} = \eta \frac{P_a}{f},$$

where P_a is incident/absorbed power at the particle scale, η is an absorption factor, and f is the drive frequency. The model therefore predicts greater absorbed energy per cycle as frequency decreases. Combining this with the mass-correlation law gives

$$\chi(f) = 1 - 2\left[\sqrt{1 + \left(\frac{\eta P_a}{f m_i c^2}\right)^2} - 1\right].$$

Thus, in the theory's own logic, ULF/ELF is not a generic "resonance aid." It is the knob that is supposed to shift gravitational mass.

De Aquino's later GCC formulation makes the frequency dependence still more explicit. In one of the published GCC expressions the predicted gravitational response contains terms scaling strongly with field amplitude and inverse powers of ELF frequency; an example given in that work has a structure proportional to $E_{\text{ELF}}^4/f_{\text{ELF}}^3$ inside the nonlinear mass-shift function. The qualitative prediction is therefore unambiguous: lower frequency and/or larger field should produce a larger change in m_g/m_i.

1.3 The EquationFarm water-paper adaptation

The EquationFarm paper restates the mechanism in terms of an EM-induced momentum change Δp and the mass ratio χ. Its first correlation equation is

$$\chi = \frac{m_g}{m_i} = \left(1 + \frac{\Delta p}{m_i c}\right)^{-1}\left(1 - \frac{\Delta p^2}{2m_i^2 c^2}\right).$$

For a low-density medium it then writes the approximation

$$\chi \simeq \left(1 + \frac{n_r D}{\rho c^3}\right)^{-1}\left(1 - \frac{n_r D}{\rho c^3}\right),$$

with D the stated power density, ρ inertial density, and n_r refractive index. The paper explicitly says that low ρ in vapor, gas bubbles, or plasma is intended to magnify the excursion of χ.

For water dissociation the claimed sequence is:

- A low-density water-vapor, microbubble, or plasma reaction zone is established.
- An ELF envelope is applied, with the source paper giving roughly 1 Hz to 10 Hz conceptually and 2 Hz to 5 Hz in its operating example.
- High-voltage pulses are superimposed to increase the EM-induced momentum/absorption term while keeping average electrical power lower than a continuous high-field drive.
- The gravitational masses of participating species are hypothesized to shift: $m_{g,s} = \chi_s m_{i,s}$.
- The source then assumes this altered gravitational coupling contributes a negative term to the reaction free energy.

This ULF/ELF-driven mass shifting is the core of the original proposal and is retained, rather than discarded, in the new theory below.

2 Water splitting with a time-dependent gravitational mass

Conventional water splitting is

$$\mathrm{H_2O(l)} \rightarrow \mathrm{H_2(g)} + \tfrac{1}{2}\mathrm{O_2(g)},$$

with approximately

$$\Delta G^\circ \approx 237.13\,\mathrm{kJ\,mol^{-1}}, \qquad \Delta H^\circ \approx 285.83\,\mathrm{kJ\,mol^{-1}}.$$

The reversible voltage is

$$E_{\mathrm{rev}} = \frac{\Delta G}{2F} \approx 1.229\,\mathrm{V}.$$

If species s has gravitational potential energy

$$G_s^{(g)}(t) = \chi_s(t) m_s \Phi,$$

then the gravitational contribution to the reaction free-energy difference is, formally,

$$\Delta G_g(t) = \Phi \sum_s \nu_s \chi_s(t) m_s,$$

where ν_s are stoichiometric coefficients and Φ is the gravitational potential convention used by the theory.

The important point is that a *uniform* shift of every species does very little for chemistry because total rest mass is nearly conserved across a chemical reaction. What can alter a reaction coordinate is a **differential shift**: reactant, transition-state, ionic, and product configurations must not all have the same χ.

Define the ULF/ELF-induced change relative to the unmodulated state as

$$\delta(\Delta G_g) = \Phi \sum_s \nu_s \big[\chi_s(t) - 1\big] m_s.$$

For the activation barrier, the corresponding form is

$$\delta\Delta G_g^{\ddagger} = \Phi \left(\big[\chi_{\mathrm{TS}} - 1\big] m_{\mathrm{TS}} - \sum_r \big[\chi_r - 1\big] m_r \right).$$

A transition-state-theory rate model would then give

$$k(t) \approx \frac{k_B T}{h} \exp\left[-\frac{\Delta G_0^{\ddagger} + \delta\Delta G_g^{\ddagger}(t)}{RT} \right].$$

This is the first major improvement over the source: the theory specifies that the useful quantity is not simply "negative χ," but a measurable *differential mass-shift susceptibility along the reaction coordinate.*

3 Quantitative audit of the ULF/ELF mass-shift pathway

3.1 Literal absorbed-energy interpretation

If the simple De Aquino relation

$$\chi = 1 - 2\left[\sqrt{1+y^2} - 1\right], \qquad y \equiv \frac{U}{m_i c^2},$$

is interpreted literally, the normalized absorbed energy needed for a target χ is

$$y = \sqrt{\left(\frac{3-\chi}{2}\right)^2 - 1}.$$

For one mole of water, $M_{\mathrm{H_2O}} c^2 \approx 1.619e+15$ J/mol. The resulting scale is:

χ	$U/(mc^2)$	literal U for 1 mol H_2O
0.1	1.050	$1.700e+15$ J/mol
0.0	1.118	$1.810e+15$ J/mol
-0.2	1.249	$2.022e+15$ J/mol
-0.3	1.312	$2.125e+15$ J/mol
-0.5	1.436	$2.325e+15$ J/mol

The result is severe: under the literal simple-U formula, moving χ into the source's claimed range requires absorbed energy of order the rest-mass energy, roughly 10^{15} J/mol. De Aquino's broader medium-dependent formulas introduce conductivity, permeability, refractive index, density, and frequency factors that are intended to amplify the response, so this calculation is not by itself a complete refutation. It does, however, show that the water paper must explicitly derive the relevant medium-coupling law for water vapor/plasma rather than jumping directly from "low frequency" to $\chi \approx -0.3$.

3.2 The source's low-density approximation

Let

$$x \equiv \frac{n_r D}{\rho c^3}, \qquad \chi = \frac{1-x}{1+x}.$$

For positive D, n_r, and ρ, this equation has the mathematical range

$$-1 < \chi \leq 1.$$

It can therefore approach -1 but cannot generate $\chi < -1$ under those assumptions.

At 298 K, ideal-gas water-vapor densities are approximately 0.01453 kg/m^3 at 20 mbar and 0.03634 kg/m^3 at 50 mbar. Inverting the printed equation gives

$$D = \frac{1-\chi}{1+\chi}\frac{\rho c^3}{n_r}.$$

Taking $n_r \approx 1$ yields:

χ	x	D at 20 mbar	D at 50 mbar
0.1	0.818	$3.204e+23$ W/m^2	$8.010e+23$ W/m^2
0.0	1.000	$3.916e+23$ W/m^2	$9.790e+23$ W/m^2
-0.2	1.500	$5.874e+23$ W/m^2	$1.469e+24$ W/m^2
-0.3	1.857	$7.273e+23$ W/m^2	$1.818e+24$ W/m^2
-0.5	3.000	$1.175e+24$ W/m^2	$2.937e+24$ W/m^2

If D is ordinary SI power density, these values are enormous. By contrast, spreading a full 10 kW uniformly over a 30 cm-diameter electrode corresponds to only $1.415e+05$ W/m^2. The source paper therefore needs either (i) a different definition/units for D, or (ii) the full De Aquino medium-dependent ELF transfer law rather than the simplified $D/(\rho c^3)$ relation.

3.3 Why the absolute Earth potential changes the scale

The source also uses an Earth-potential expression rather than a local mgh expression. At the Earth's surface,

$$|\Phi_\oplus| = \frac{GM_\oplus}{R_\oplus} \approx 6.257e+07 \text{ J/kg}.$$

For one mole of water this corresponds to

$$|\Phi_\oplus| M_{H_2O} \approx 1127.1 \text{ kJ/mol}.$$

This explains why a modest differential χ can algebraically generate an order-100 kJ/mol term if the theory is allowed to couple to the Earth's absolute potential.

The required effective differential shift is:

Assistance	Energy	$\lvert\Delta\chi_{\text{eff}}\rvert$ using $\lvert\Phi_\oplus\rvert$	$\lvert\Delta\chi\rvert$ using 0.5 m local gh
1% of ΔG	2.37 kJ/mol	0.0021	2.684e+04
10% of ΔG	23.71 kJ/mol	0.0210	2.684e+05
50% of ΔG	118.56 kJ/mol	0.1052	1.342e+06
100% of ΔG	237.13 kJ/mol	0.2104	2.684e+06

This table is crucial. If the correct interaction is with the Earth's absolute gravitational potential, a differential χ of only about 0.21 would correspond algebraically to the full Gibbs free-energy scale. If the interaction is only through a half-metre local height, the required shift is of order 10^6. The source paper uses both kinds of expression without deriving why they are physically interchangeable. The new theory therefore treats the potential convention as an experimentally discriminated model choice, not an assumption.

3.4 ULF/ELF frequency dependence must be measured directly

A genuine De Aquino-type effect predicts a structured response to frequency. At fixed relevant field/absorbed-power conditions, lower ULF/ELF frequency should produce a larger mass shift. This is a stronger signature than simply observing more hydrogen under pulsed excitation. The required measurement is therefore

$$\chi(f, E, \rho, \sigma, \text{ionization}) = \frac{m_g}{m_i}$$

measured independently of hydrogen production.

A hydrogen anomaly without an independently measured χ would not establish the proposed gravitational mechanism; plasma chemistry, surface charging, waveform-dependent overpotential, heating, or gas-flow error could produce the same observation.

4 New theory: Phase-Synchronized Differential Gravitational-Mass Modulated Electrolysis

The new theory, PS-DGMME, preserves the ULF/ELF mass-shift hypothesis but removes three weaknesses in the source: it does not assume all species have the same χ, it does not infer χ from hydrogen output, and it does not count gravitational energy without a closed-cycle reservoir term.

4.1 Species-dependent mass-shift susceptibility

For each chemically relevant species or state s, define

$$\chi_s(t) = 1 - 2\left[\sqrt{1+\Gamma_s(t)^2} - 1\right], \qquad \Gamma_s(t) = \frac{U_{\text{abs},s}(t)}{m_s c^2}.$$

The absorbed term is written in the ULF/ELF spirit of De Aquino as

$$U_{\text{abs},s} \propto \frac{\eta_s(E, \rho, \sigma, \text{ionization}) P_{\text{abs},s}}{f_{\text{ULF}}}.$$

The critical new parameter is not merely χ_s but the differential susceptibility

$$S_s \equiv \frac{\partial \chi_s}{\partial \ln(P_{\mathrm{abs},s}/f_{\mathrm{ULF}})}.$$

PS-DGMME predicts useful chemistry only if reactants, charged intermediates, transition states, and products possess measurably different effective S_s under the same field environment.

4.2 Phase synchronization

The source already proposes a low-frequency envelope plus faster high-voltage pulses. PS-DGMME turns that into a testable timing hypothesis. Let

$$E(t) = E_U \sin(2\pi f_U t) + \sum_k E_p\, p(t - t_k) \cos(2\pi f_p t),$$

where f_U is the ULF/ELF modulation and f_p is the fast pulse carrier. The pulse times t_k are chosen so that ionization and charge transfer occur near the extrema of the independently measured differential mass shift.

The theory therefore predicts a **phase-sensitive hydrogen response**: shifting the pulse train by 180° relative to the ULF/ELF mass-shift cycle should change the effect if the mechanism is truly gravitational-mass modulation rather than generic RMS heating or plasma enhancement.

4.3 Reaction free-energy coupling

The modulated reversible electrical requirement is modeled as

$$\Delta G_{\mathrm{eff}}(t) = \Delta G_{\mathrm{chem}} + \delta(\Delta G_g)(t), \qquad E_{\mathrm{rev,eff}}(t) = \frac{\Delta G_{\mathrm{eff}}(t)}{nF}.$$

The useful gravitational term is explicitly differential:

$$\delta(\Delta G_g) = \Phi_{\mathrm{eff}} \sum_s \nu_s [\chi_s(t) - 1] m_s.$$

The parameter Φ_{eff} is not assumed in advance to be either gh or $-GM_\oplus/R_\oplus$. The experiment must determine which, if either, predicts the measured energetics.

4.4 Closed-cycle reservoir accounting

A local electrical COP above unity is not sufficient evidence of new energy. The complete balance is written as

$$P_{\mathrm{elec}} + P_{\mathrm{ULF}} + P_{\mathrm{pulse}} + P_{\mathrm{aux}} + P_G = \dot{n}_{\mathrm{H_2}} \Delta H + P_{\mathrm{reject}} + \frac{dU_{\mathrm{sys}}}{dt}.$$

Here P_G is the hypothesized inward gravitational-reservoir power. In the source paper this term is verbally attributed to the Earth/cosmic mass distribution. In PS-DGMME it is not allowed to be an assumed bookkeeping credit. A nonzero P_G is an *inference only after* all ordinary energy terms and stored-energy changes are measured and a residual remains reproducibly above uncertainty.

5 Three adversarial attempts to discredit the new theory

5.1 Attack 1: a uniform mass shift cancels out of the chemistry

Attack. If the ULF/ELF drive changes the gravitational mass of every reactant, transition state, and product by essentially the same fractional amount, then the gravitational contribution to a chemical free-energy difference nearly cancels because chemical reactions conserve total mass to very high accuracy.

Initial result: FAIL. A theory based only on "make χ negative" is insufficient.

Amendment 1. PS-DGMME requires a *differential* χ_s response. Charged clusters, interfacial intermediates, and transition-state configurations must exhibit different ULF/ELF mass-shift susceptibility from bulk water and final products. This is measured independently through phase-resolved force/mass-shift proxies and correlated with electrochemical state.

Post-amendment status: conditional pass. The theory survives only if differential susceptibility is experimentally found. A null differential measurement falsifies the chemical-coupling branch even if a bulk GCC-like mass anomaly were observed.

5.2 Attack 2: the required mass shift may cost more EM energy than it saves

Attack. The literal $U/(mc^2)$ mass-correlation law implies that moving χ toward zero or negative values requires absorbed energy comparable to rest energy. The source's simplified low-density equation also requires implausibly large SI power density at the stated pressure if read literally.

Initial result: FAIL. The source's numerical performance forecast cannot be retained without a validated transfer function from ULF/ELF drive to χ.

Amendment 2. PS-DGMME removes all assumed χ values from the performance model. It first measures the empirical response surface

$$\chi = \chi(f_U, E_U, D_p, \rho, \sigma, n_r, \text{ionization}),$$

and only then predicts hydrogen energetics. If the measured χ excursion is too small, the theory stops at that stage. This amendment prevents a speculative field-to-mass equation from silently creating the desired performance.

Post-amendment status: pass as a falsifiable theory, not as a proven device.

5.3 Attack 3: changing and resetting χ may cancel the gravitational gain

Attack. If gravitational potential energy is $U_g = \chi m \Phi$, then changing χ at fixed Φ itself changes potential energy:

$$dU_g = m\Phi\, d\chi + \chi m\, d\Phi.$$

For a closed cycle that changes χ, moves through a potential, restores χ, and returns to the starting state, the state-function contributions cancel unless another reservoir supplies net work.

Initial result: FAIL for unconditional overunity. A cycle cannot simply subtract ΔE_{grav} from electrolysis input and ignore the energetic cost/credit of creating and resetting the mass-shifted state.

Amendment 3. The final theory includes the explicit reservoir term P_G and requires an independently reproducible residual energy balance. "Cosmic reservoir" is a hypothesis to be demonstrated, not a free parameter. The experiment must show that the ULF/ELF drive produces a repeatable energy deficit unexplained by electrical, thermal, chemical, pressure, or stored-energy terms.

Post-amendment status: pass as a logically closed, falsifiable extension. It no longer guarantees overunity; it specifies what evidence would be required for overunity to be credible.

6 Experimental sequence that directly tests the De Aquino mechanism

The testing order is deliberately different from the source paper. Hydrogen production is *not* the first measurement.

6.1 Stage A: independent ULF/ELF mass-shift null test

Use a sealed, professionally engineered low-density test cell and measure apparent gravitational response while varying frequency, field amplitude, pressure, and ionization state. The key signature is a reversible, phase-coherent change correlated with the ULF/ELF drive. Tests must include field-off, sham waveform, frequency-scrambled, thermal-matched, vibration-matched, and electrostatic-force controls.

The predicted De Aquino signature is not merely "some force." It is a monotonic/nonlinear frequency dependence in which lower ULF/ELF frequency produces a larger effect at otherwise matched conditions.

6.2 Stage B: water-vapor/plasma response map

Only if Stage A yields a reproducible anomaly should water vapor, ionized vapor, and plasma/microbubble states be mapped. The goal is to establish

$$\chi_s(f, E, \rho, \sigma, \text{ionization})$$

for the actual medium used in water dissociation, rather than importing parameters from mercury plasma, iron, or other De Aquino GCC examples.

6.3 Stage C: phase-sensitive electrochemical test

Operate a water-splitting cell with the ULF/ELF envelope while varying the phase of the high-frequency electrochemical/plasma pulses. If PS-DGMME is correct, hydrogen yield or required cell voltage should show a phase-dependent component correlated with the measured $\chi(t)$ waveform. Generic heating or RMS-power explanations should not reproduce the same phase relation after matched controls.

6.4 Stage D: Faraday and mass balance

For one mole of hydrogen, ordinary electrolysis requires

$$Q = 2F \approx 192\,970\,\mathrm{C\,mol^{-1}}.$$

Any claimed Faraday efficiency above 100% must be tested with simultaneous dry hydrogen flow, oxygen flow, integrated charge, water consumption, gas composition, temperature, and pressure. If more hydrogen appears than charge permits, the theory must identify a non-electrochemical dissociation channel or an additional charge-transfer path.

6.5 Stage E: total energy closure

All electrical waveform energy must be obtained from time-resolved $v(t)i(t)$ integration. External heating, vacuum pumps, gas handling, ionization sources, cooling, compression, and stored capacitor/thermal energy are included. A residual is interesting only if it persists after full uncertainty propagation and independent replication.

7 Concrete predictions of PS-DGMME

The revised theory is falsifiable through the following linked predictions:

1. **Frequency law:** at matched relevant field/absorbed-power conditions, the independently measured mass-shift signal should increase as the ULF/ELF frequency is decreased in the regime claimed by De Aquino.
2. **Reversibility:** the signal should disappear when the ULF/ELF drive is removed and return reproducibly without long thermal lag if it is truly a field-driven mass effect.
3. **Density dependence:** lower-density vapor/plasma should show a larger response under the source paper's $D/(\rho c^3)$ hypothesis, after controlling for ordinary electrostatic and plasma forces.
4. **Phase sensitivity:** hydrogen-production enhancement should depend on the phase between the ULF/ELF mass-shift cycle and the faster dissociation pulse train.
5. **Differential susceptibility:** chemically distinct charge states/intermediates must not all share the same $\chi(t)$ if the gravitational shift is to alter the reaction barrier materially.
6. **Energy closure:** any apparent local COP above unity must leave a reproducible positive residual after ULF, pulse, auxiliary, thermal, chemical, and stored-energy terms are included.

Failure of predictions 1 or 2 falsifies the De Aquino mass-shift premise in the tested regime. Failure of prediction 5 falsifies the water-chemistry extension even if a bulk mass shift exists. Failure of prediction 6 falsifies the overunity interpretation while leaving open a non-overunity field-assisted electrochemical effect.

8 Why this theory is stronger than the earlier rewrite

The earlier AECWS rewrite replaced the source's speculative gravitational mechanism with conventional heat/exergy integration. That made the engineering proposal more conventional, but it did not satisfy the original research goal: improve the De Aquino-based theory itself.

PS-DGMME instead preserves the defining ULF/ELF mass-shift mechanism and improves it in four ways:

- It derives the chemistry from *differential* gravitational-mass shifts rather than a single bulk χ.
- It phase-locks the fast dissociation drive to the independently measured ULF/ELF mass-shift waveform.
- It refuses to assume a field-to-χ transfer function that has not been measured in the actual water-vapor/plasma medium.
- It places the hypothesized gravitational/cosmic energy reservoir explicitly inside the energy balance instead of using it as an unmeasured credit.

If De Aquino's mass-shift effect is real, these changes provide a much cleaner route to detecting and exploiting it. If it is not real, the same structure should reveal that quickly through a direct null result before expensive hydrogen scale-up.

9 Safety and implementation boundary

The source paper combines low-pressure gas/vapor, high voltage, plasma/ionization, and hydrogen/oxygen production. Those systems present serious electrical, vacuum, ignition, and explosive-mixture hazards. This paper therefore specifies measurements and falsification logic rather than do-it-yourself construction dimensions or wiring instructions. Experimental work should use professionally engineered hydrogen-compatible equipment, gas separation, ventilation, purge systems, pressure protection, interlocks, and appropriate electrical classification.

10 Conclusion

A correct reading of the source makes ULF/ELF-driven gravitational-mass shifting the center of the theory. De Aquino's hypothesis is that absorbed very-low-frequency electromagnetic excitation changes the ratio $\chi = m_g/m_i$; his papers explicitly predict stronger gravitational-mass changes as frequency is reduced, and the EquationFarm water paper applies that proposed mass shift to water molecules and ionic/plasma intermediates.

The revised PS-DGMME theory therefore does not replace mass shifting with ordinary heat integration. It asks the sharper question: *can a directly measured, phase-dependent, species-dependent ULF/ELF gravitational-mass shift alter the water-dissociation free-energy landscape enough to reduce electrical work, and does a closed energy balance reveal an independent gravitational-reservoir contribution?*

Three attacks forced substantial amendments. A uniform χ shift largely cancels chemically, so the theory requires differential susceptibility. The printed field-to-χ equations do not presently justify the claimed magnitude, so χ must be measured before performance is forecast. A closed variable-χ cycle can cancel unless another reservoir supplies work, so any overunity claim must demonstrate a reproducible residual rather than assume one.

The resulting theory is more faithful to Fran De Aquino's actual ULF/ELF mass-shift proposal, more restrictive quantitatively, and more experimentally falsifiable than either the EquationFarm source or the previous rewrite.

References

1. EquationFarm, *Overunity Cracking of the Water Molecule for Scalable Hydrogen Extraction: A Direct Application of Fran De Aquino's Relativistic Theory of Quantum Gravity and Gravitational Energy*

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2. F. De Aquino, *Possibility of Control of the Gravitational Mass by means of Extra-Low Frequencies Radiation*, arXiv:gr-qc/0005107 (2000).

3. F. De Aquino, *Gravity Control by means of Electromagnetic Field through Gas or Plasma at Ultra-Low Pressure*, arXiv:physics/0701091 (2007; later revisions).

4. F. De Aquino, *How to Extract Energy Directly from a Gravitational Field*, arXiv:gr-qc/0007069 (2000).

5. Standard electrochemical thermodynamics for water splitting: $\Delta G^\circ \approx 237.13$ kJ/mol, $\Delta H^\circ \approx 285.83$ kJ/mol, and $E_{\text{rev}} \approx 1.229$ V at standard conditions.