

Correction of the MEGA Propulsion Interpretation and Physical Lessons about OQG

Todd J. Desiato

Version 0.3 · 23 October 2026

Independent researcher, Statesville, North Carolina, USA

Correspondence: mainengineering@gmail.com | ORCID: 0000-0002-7514-0169

Abstract

This paper corrects the interpretation of a proposed Mach Effect Gravity Assist (MEGA) drive; it identifies no error in Operational Quantum Gravity (OQG) or its scaling and supporting-power theorems. Discussions with Michelle Broyles and comparison with force data she supplied exposed a large discrepancy between the calculated force and the experimental values provided for comparison. Re-examination found that the retained impulse depended on a prescribed environmental response. Multiple revisions improved the energy and momentum accounting without establishing that response for the apparatus. The propulsion and performance claims are therefore withdrawn. The correction also develops a practical account of applying OQG to a source and receiver. Lifting a body adds gravitational energy while increasing its stationary material scale; accelerating it adds kinetic energy while reducing its clock rate and longitudinal scale relative to the source environment. The material Hamiltonian connects these operations to the same dispersion interaction that governs unforced, geodesic motion. Applied work changes the body's physical preparation, and the distinction between total energy and phase rate explains their opposite changes during acceleration. Clock and ruler scaling preserves the locally measured light speed, while finite-speed signal comparisons recover the Lorentz transformation without a second clock-slowness factor. The analysis shows why a sampled change in supporting state cannot be substituted for a spatial force and why source-response, conservation, and independent-data checks are all necessary.

Keywords: Operational Quantum Gravity; material scaling; supporting power; matter-wave dispersion; momentum conservation; propulsion correction

Mathematics Subject Classification 2020: 83C10; 70H05; 83A05

1 Introduction and scope

The error corrected here concerns the application of OQG to the proposed MEGA drive. It is not a retraction of OQG and identifies no error in its scaling or supporting-power theorems. Their mathematical statements, assumptions, and proofs remain unchanged. The failed step was treating a conditional device response as a demonstrated source of propulsion.

I thank Michelle Broyles for our discussions and for her assistance in providing force data for comparison. The experimental values supplied were much smaller than the force calculated for the proposed apparatus. That discrepancy prompted the re-examination reported here. It was a valuable diagnostic warning; the decisive problem was the unestablished external reaction on which the prediction depended. This paper does not reproduce or independently re-analyze the supplied measurements.

This correction replaces the propulsion conclusions of *Mach Effect Gravity Assist Warp Drive in Operational Quantum Gravity*, version 0.8 [1], and withdraws the corresponding claims in earlier versions, including version 0.7 [2]. The theoretical results used in reviewing the application come from the supporting-power paper, version 2.3 [3], the matter-wave scaling paper, version 1.5 [4], and the subsequent scattering studies [5,6]. References are given where those results enter the calculation so that the established mathematical relations can be followed separately from their device-specific application.

The purpose is also instructional. An OQG calculation must follow the physical source, the receiver, the work performed, and the complete exchange of energy and momentum. Work on one body changes its preparation relative to another body and their shared environment. A change of coordinates performs no such operation. The discussion below follows that physical sequence, first locating the propulsion error and then explaining how to use the material response consistently in lifting, acceleration, and clock and ruler comparisons.

2 How the propulsion error survived multiple revisions

The proposed apparatus places a piezoelectric lead zirconate titanate (PZT) stack between a massive ship and a lighter end disk. The stack drives the disk outward, stops it, and returns it. The propulsion argument required the stack to continue pushing outward while an environmental restoring force stopped the disk during the latter part of extension. Assigning the restoring reaction to the external supporting environment allowed a ship impulse to remain after the disk returned.

By version 0.7, the restoration-energy account included the kinetic energy surrendered during braking, actuator work, and energy exchanged through explicit evolution of the field. Those corrections were necessary, but they did not determine whether the apparatus generated the required restoring load. The reaction was still assigned to the environment, and the other onboard components were required to supply no compensating environmental impulse. The energy balance was checked within that prescription; the prescription itself remained unverified.

Version 0.8 made the requirement explicit in its Table 2. During acceleration, the supporting state changed through explicit time evolution with no spatial environmental force. During braking, it changed through a stationary spatial restoring gradient. During return, ambient support was restored and the environmental force was again set to zero. These different physical responses for different parts of the motion produced the nonzero example impulse [1].

The missing step can be stated precisely. Let $b_h(x, t)$ describe an environmental material profile, x be the disk position, t the comparison time, and $v_x = dx/dt$. The profile sampled along the disk's path obeys

$$\frac{db_h}{dt} = \frac{\partial b_h}{\partial t} + v_x \frac{\partial b_h}{\partial x}. \quad (1)$$

A measured or prescribed history along the path fixes the left side of Eq. (1), not the two terms separately. Setting the explicit time derivative to zero during braking converts the entire sampled change into a spatial gradient. Choosing a different division during acceleration does not follow from that history or from the scaling theorem. Version 0.8, Section 10.4, already showed that using the same stationary-gradient rule throughout extension cancels the leading environmental impulses at equal endpoint velocities. Its nonzero example survived because acceleration used a different response.

The receiver's material state may also depend on its velocity and internal condition. Let $b_R = b_R(x, t, v_x, \xi_1, \dots, \xi_n)$ be that state factor, $a_x = dv_x/dt$, and ξ_j the retained internal variables, such as strain or temperature. The appropriate derivative is then

$$\frac{db_R}{dt} = \frac{\partial b_R}{\partial t} + v_x \frac{\partial b_R}{\partial x} + a_x \frac{\partial b_R}{\partial v_x} + \sum_{j=1}^n \dot{\xi}_j \frac{\partial b_R}{\partial \xi_j}. \quad (2)$$

Acceleration can therefore change the receiver's support even in a locally uniform ambient profile. The practical instruction is to identify the dependence before taking derivatives: a change due to

velocity is not automatically an environmental spatial gradient. Replacing the left side of Eq. (2) by its spatial term would reproduce the original error in a different notation.

The associated 35 kHz characterization record [7] selected a restoration energy equal to twice the maximum modeled kinetic energy and imposed the corresponding load. Its approximately 82.99 N reference result followed from that assignment. Electrical accounting, stress estimates, and conservation checks within the selected model could confirm its numerical implementation, but could not independently establish the external response. This explains how the problem survived multiple reviews: the checks improved the consequences of an input without deriving the input responsible for propulsion.

The distinction remains when losses are included. Let p_d denote disk momentum, S the stack force on the disk, $F_{\text{env},d}$ the external environmental force on it, and T_c a complete repetition period. The signed disk balance is

$$\Delta p_d = \int_0^{T_c} S \, dt + \int_0^{T_c} F_{\text{env},d} \, dt. \quad (3)$$

If the disk returns to its initial momentum, the integrated contact impulse is fixed by the environmental impulse. The stack also carries distributed momentum, including stress-wave momentum, and its change must be included. Once the internal motions repeat, internal acceleration and stopping impulses cancel in the balance of the complete assembly. A deformable stop can lower the peak force and suppress rebound. Heat, strain, and vibration do not consume the impulse required to reach a specified final momentum.

With the imposed environmental load removed, the existing one-dimensional actuator control gives zero mean mechanical reaction to numerical precision. At 35 kHz, with a 10 g disk and a 100 V peak-to-peak drive, approximately 0.428 W supplies the modeled PZT mechanical and dielectric losses. This control retains selected loss parameters and a rigid-disk approximation; it is not a measurement or a complete moving-body scattering calculation. Its significance is limited but clear: those internal losses do not preserve an acceleration impulse. Any nonzero assembly thrust requires an independently established external momentum exchange.

3 Applying OQG to a physical source and receiver

Begin with two bodies, A and B , prepared in matched local conditions. Body B , surrounding matter, and the boundaries establish the supporting environment sampled by A . An actuator then performs

work on A , either lifting it through the gravitational configuration or accelerating it relative to B . The clocks and rulers accompanying B record the operation. This identifies actual matter, an actual source environment, and an actual work history; it does not create a material difference by choosing another inertial description.

In OQG, charge and current fluctuations throughout both bodies participate in the shared electromagnetic field. Their storage and exchange response determines how they receive and reradiate that field [3, Secs. 2.4 and 3; 5, Sec. 2]. To display the interference, let $\mathbf{E}_a$ be the incident ambient electric field and $\mathbf{E}_B$ the contribution scattered by B at the receiver. Angular brackets denote an ensemble average and an asterisk complex conjugation. The received mean-square field satisfies

$$\langle |\mathbf{E}_a + \mathbf{E}_B|^2 \rangle = \langle |\mathbf{E}_a|^2 \rangle + \langle |\mathbf{E}_B|^2 \rangle + 2\text{Re}\langle \mathbf{E}_a \cdot \mathbf{E}_B^* \rangle. \quad (4)$$

The cross term carries the correlated influence of source and receiver. Together with their frequency-dependent response and repeated scattering, it changes the exchange sustaining the receiver. OQG connects that change to its material storage state and to the gravitational interaction. Relative motion changes the sampled frequencies and directions; source rotation can also generate directional momentum coupling, as developed in the rotational scattering paper [6]. These are physical source-response effects.

The ambient field in this calculation includes matter-generated and scattered contributions. Its spectrum and angular distribution need not remain invariant between moving receivers. This does not identify the source-dependent spectrum with the bare Lorentz-invariant vacuum, nor change the covariance of the field equations [3, Sec. 2.1; 5, Secs. 1 and 4]. A Doppler comparison is made between the physical source and receiver, with their response and field correlations included. Selecting the source for the calculation does not select an absolute vacuum rest state.

The next step is to identify which material scales are being compared. Let $f > 0$ be the transition-frequency factor, $b > 0$ the material length factor, and H_0 the reference internal Hamiltonian. The unitary dilation U_b changes internal lengths while preserving probability. For corresponding states, the scaling theorem gives [3,4]

$$\begin{aligned} H_{f,b} &= f U_b H_0 U_b^\dagger, \\ \Delta E_{nm}(f, b) &= f \Delta E_{nm,0}, \quad L(f, b) = b L_0. \end{aligned} \quad (5)$$

Here ΔE_{nm} is a transition-energy gap and L a corresponding material length. The theorem compares different material states: the frequencies and dimensions of the apparatus change. Let P_s denote its balanced supporting exchange and P_{s0} the reference exchange for the same receiver and corresponding channels, with both powers expressed using the same comparison-time standard. The supporting-power theorem gives

$$\frac{P_s(f,b)}{P_{s0}} = f^2. \quad (6)$$

Balanced support is the incoming and outgoing exchange sustaining the state. It is distinct from the net mechanical power supplied by an actuator or the net heat deposited in the body. This distinction permits positive mechanical work to accompany either an increase or a decrease in supporting power, as the two operations in Section 4 demonstrate.

For the stationary isotropic family, let ϵ_0, μ_0 be the reference electromagnetic coefficients and $c_0 = 1/\sqrt{\epsilon_0\mu_0}$. Expressed in the same external comparison standards, the corresponding coefficients are [3,4]

$$\frac{\epsilon(f,b)}{\epsilon_0} = \frac{\mu(f,b)}{\mu_0} = \frac{1}{fb}, \quad c(f,b) = fb c_0. \quad (7)$$

On the common branch $f = b$, supporting power scales as b^2 and the comparison propagation speed is $c(b) = b^2 c_0$. Keeping f and b separate until the branch is specified prevents an isotropic equilibrium formula from being applied indiscriminately to directional motion.

The physical measuring standards explain why a local light-speed measurement is unchanged. Let the reference ruler length be L_0 and clock frequency ν_0 . In the stationary state (f, b) they become bL_0 and $f\nu_0$. For a locally uniform segment, its transit time Δt in the unchanged comparison time and the clock-cycle count N are

$$\Delta t = \frac{bL_0}{fb c_0} = \frac{L_0}{f c_0}, \quad N = f\nu_0 \Delta t = \frac{\nu_0 L_0}{c_0}. \quad (8)$$

The clock counts the same number of cycles across its corresponding ruler. Equivalently, local ruler and clock readings satisfy $d\ell = dx/b$ and $d\tau = f dt$, so

$$c_{\text{meas}} = \frac{d\ell}{d\tau} = \frac{c(f,b)}{fb} = c_0. \quad (9)$$

This result holds for independent positive f and b in the stated stationary family. At different altitudes the material standards and propagation coefficients change together; the local measurement

remains constant. At one fixed altitude, the surrounding source configuration fixes the local ambient propagation state. Work on the receiver must therefore be followed through its energy and momentum response in that environment, as the next section does, rather than used to change the ambient speed independently.

4 Work and the material dispersion response

Consider first a book resting on a table and then lifted slowly onto a higher shelf. Let $E_0 = m_0 c_0^2$ be its reference complete-body material energy, with reference mass m_0 . For stationary corresponding states the rest-storage energy is $U_{\text{rest}} = f E_0$. If states 2 and 1 are the initial and final supported states, with $f_1 > f_2$, reversible lifting gives

$$W_{\text{lift}} = \Delta U_g = E_0(f_1 - f_2) > 0, \quad \frac{P_{s1}}{P_{s2}} = \left(\frac{f_1}{f_2}\right)^2. \quad (10)$$

On the common branch, $b_1 > b_2$. The reduced scattering deficit at the higher location allows greater supporting exchange, increased material scale, and a faster clock relative to the initial standard. The lifting work supplies the increase in recoverable gravitational storage [3, Sec. 5; 4]. The book is supported away from free fall both on the table and on the shelf. Holding it still requires a support force, but the stationary force performs no continuing mechanical work on the book. During lifting, the force and displacement transfer the energy in Eq. (10); reversible lowering can recover it.

The same material description also governs motion. Let $f_h(x, t)$ and $b_h(x, t)$ now denote the stationary factors selected by the source environment, and let q be canonical momentum in the external comparison standards. The one-dimensional propagation Hamiltonian is [3, Secs. 6.1–6.4 and 8; 4, Sec. 7]

$$\begin{aligned} H(x, q, t) &= f_h \sqrt{E_0^2 + c_0^2 b_h^2 q^2}, \\ H &= f_h E_0 + \frac{q^2}{2m_{\text{eff}}} + O(q^4), \quad m_{\text{eff}} = \frac{m_0}{f_h b_h^2}. \end{aligned} \quad (11)$$

This is the center-of-mass Hamiltonian, distinct from the internal-state Hamiltonian in Eq. (5). Its spatial dependence carries the gravitational storage interaction, and its momentum dependence determines propagation and inertia. On the common branch, the low-speed inertial coefficient is $m_0 b_h^{-3}$. The source factors in Eq. (11) are environmental variables; the receiver's motion response must not be inserted into them and then silently held constant during momentum differentiation.

Let F_{app} be the actuator or support force added to this conservative material interaction. Hamilton's equations and the associated work balance are

$$\begin{aligned}\dot{x} &= \frac{\partial H}{\partial q}, & \dot{q} &= -\frac{\partial H}{\partial x} + F_{\text{app}}, \\ \frac{dH}{dt} &= \frac{\partial H}{\partial t} + F_{\text{app}}\dot{x}.\end{aligned}\tag{12}$$

With $F_{\text{app}} = 0$, these are the unforced trajectories shown in V2.3 to be geodesics. In OQG, the applied load acts against the material response of the same microscopic dispersion interaction that determines those trajectories. Applied work drives the body away from that unforced evolution; a separate gravitational mechanism is not introduced when the actuator is switched on. At instantaneous rest, the storage force is $-E_0 \partial_x f_h$. In a spatially uniform environment, resistance to acceleration is instead expressed by the momentum dependence of the same Hamiltonian. These derivatives have different jobs and must not be added as duplicate reaction forces. This is the connection needed here to the geometrical description; the geodesic proof is already given in [3].

Now accelerate the book or disk locally at its original altitude. Use the physical clocks and rulers accompanying B , with position X and clock time T . In a sufficiently small region, neglect source recoil and variations of the ambient factors for this local calculation. A propulsion balance must subsequently restore the source and actuator reactions. Let E_* be the receiver's fixed rest energy before acceleration, $m_* = E_*/c_0^2$, E its total moving energy, and p its local longitudinal momentum. In these local standards the dispersion relation becomes

$$E^2 = E_*^2 + c_0^2 p^2, \quad v = \frac{dE}{dp} = \frac{c_0^2 p}{E}.\tag{13}$$

The velocity $v = dX/dT$ is the wave-packet group velocity. Increasing the momentum changes the receiver's propagation through this dispersion law while the local ambient light speed stays c_0 . With $F = dp/dT$ the applied longitudinal force in this uniform environment, the work is

$$\frac{dE}{dT} = vF, \quad W_{\text{kin}} = E - E_*.\tag{14}$$

This is the resistance to acceleration encountered by the actuator in the material description. It is present even where the local spatial storage gradient is negligible. For the reversible calculation, braking can recover the added kinetic energy. Mechanical and dielectric losses contribute separately to the supplied energy and cannot be represented by adding the same inertial response again as a drag force.

To see how positive work accompanies a lower clock rate, retain both energy and momentum in the phase. Let $\hbar$ be the reduced Planck constant and θ the matter-wave phase, with $d\theta = (p dX - E dT)/\hbar$. Along the body's path, $dX = v dT$. The positive magnitude of its phase rate is therefore

$$\Omega_A = \frac{E-pv}{\hbar} = \frac{E_*^2}{\hbar E}. \quad (15)$$

Define $\Omega_* = E_*/\hbar$, the motion factor $s = \Omega_A/\Omega_*$, and $\beta = v/c_0$. Eliminating momentum using Eq. (13) gives

$$s = \frac{E_*}{E} = \sqrt{1 - \beta^2}, \quad \gamma = \frac{1}{s}, \quad W_{\text{kin}} = E_* \left(\frac{1}{s} - 1 \right). \quad (16)$$

For nonzero speed, $W_{\text{kin}} > 0$ even though $s < 1$. Total energy E increases, while the phase accumulated along the physical path is governed by the decreasing quantity $E - pv = sE_*$. These are different energy combinations. The latter must not be substituted for the fixed rest-energy parameter E_* in Eq. (13). Treating its decrease as an extra release of gravitational storage would count the energy incorrectly and recreate the apparent surplus that caused difficulty in the propulsion argument.

For a material clock whose internal phases follow this common evolution, $d\tau_A = s dT$. The motion-related OQG supporting response is obtained by applying the power theorem to this corresponding clock factor. Let f_v be its frequency factor relative to the stationary receiver at the same altitude. Then

$$\begin{aligned} f_v &= s, \\ \frac{P_{S,A}(v|B)}{P_{S,A}(0|B)} &= s^2 = 1 - \frac{v^2}{c_0^2} = \left(1 + \frac{W_{\text{kin}}}{E_*} \right)^{-2}. \end{aligned} \quad (17)$$

Both powers in Eq. (17) refer to the same receiver, corresponding support channels, and the same source clock time T ; they are not the absolute powers supporting two differently sized bodies. The notation $v | B$ records the receiver's motion relative to the physical environment associated with B . In this OQG account, the changed reception, scattering, and material response reduce supporting power during acceleration. Section 5 gives the corresponding longitudinal length factor $b_v = s$, with unchanged transverse comparison scales. This directional response is distinct from isotropic stationary expansion during lifting.

Thus the two departures require positive work but change material scale in opposite directions. Lifting changes the source configuration sampled by the receiver and raises its stationary storage.

Acceleration at fixed altitude raises total kinetic energy while lowering its material clock and longitudinal comparison factors relative to B . The same supporting-power relation is used once, with the appropriate state and physical standards specified. The propagation calculation uses the local Lorentz dispersion already present in V2.3; it connects that law to work and supporting response without claiming a new evaluation of the moving two-body scattering kernel. In particular, Eq. (17) specifies a scalar support ratio, not an external impulse on the complete apparatus.

The force and state-rate equations make the connection explicit. With $a = dv/dT$, differentiation at fixed E_* gives

$$p = \frac{m_* v}{s}, \quad F = \frac{m_* a}{s^3}, \quad \frac{ds}{dT} = -\frac{va}{c_0^2 s}. \quad (18)$$

The last expression is a concrete velocity-dependent contribution of the kind retained in Eq. (2). It can be nonzero without any spatial change in the ambient profile. When acceleration ceases, the added kinetic energy and the changed comparison with B persist without continuing mechanical work. Braking, heat transfer, radiation, or exchange with another body can subsequently transfer energy elsewhere. The physical work history matters; it neither supplies a free energy reservoir nor identifies where an external reaction momentum has gone.

5 Clock and ruler comparisons and checks on the application

Having determined the motion factor, we can relate the readings made with the two bodies' physical standards. Consider an interval of uniform relative motion in the same local ambient region. Let x_A, t_A be readings assigned using the translating apparatus accompanying A , and let λ be its longitudinal ruler factor relative to the initially matched apparatus. Homogeneity permits the linear comparison

$$x_A = \frac{X - vT}{\lambda}, \quad t_A = sT + \alpha x_A. \quad (19)$$

At the origin of A , Eq. (19) reproduces the physical clock rate $dt_A = s dT$ already calculated. The coefficient α specifies synchronization of separated clocks. Use symmetric light-signal synchronization and impose the same local measured speed on the right-going and left-going rays: $X = \pm c_0 T$ corresponds to $x_A = \pm c_0 t_A$. Substitution yields

$$1 - c_0 \alpha = \frac{s\lambda}{1 - \beta}, \quad 1 + c_0 \alpha = \frac{s\lambda}{1 + \beta}. \quad (20)$$

Adding and subtracting these conditions gives

$$s\lambda = 1 - \beta^2 = s^2, \quad \lambda = s, \quad \alpha = -\frac{v}{c_0^2}. \quad (21)$$

The resulting Lorentz comparison is

$$x_A = \gamma(X - vT), \quad t_A = \gamma\left(T - \frac{vX}{c_0^2}\right), \quad \gamma = \frac{1}{s}. \quad (22)$$

Within the axial material interpretation, $b_v = \lambda = s$: the longitudinal scale decreases while the transverse comparison factors remain unity. The same result is represented by the axial scaling matrix $\text{diag}(s, 1, 1)$. Finite-speed synchronization accounts for the relation between separated readings; it does not perform the work on the body. The physical sequence is therefore work and changed material propagation, followed by comparison of the resulting clocks and rulers using light. The reciprocal factor γ describes that comparison and is not a second physical slowing to multiply into s .

This construction also explains how a fixed local light speed is compatible with the changed receiver. The stationary cancellation in Eq. (9) concerns the matched clock, ruler, and ambient coefficients at an altitude. Equations (19)–(22) concern a directional moving receiver in that fixed environment. One must not substitute its longitudinal motion factor into every isotropic stationary coefficient in Eq. (7). Doing so would change the ambient propagation state and count part of the receiver response twice.

The received Doppler frequency is another comparison that follows from the same phase account. Let a component of the source-associated field have phase $\varphi = \mathbf{k} \cdot \mathbf{X} - \omega_B T$, with angular frequency ω_B , wavevector $\mathbf{k}$, and longitudinal component k_x . Evaluating the phase along A and dividing by its clock increment gives

$$\omega_A = \frac{\omega_B - vk_x}{s} = \gamma\omega_B(1 - \beta\cos\theta), \quad (23)$$

where $k_x = (\omega_B/c_0)\cos\theta$ for a propagating wave in the specified local region. The angle θ is measured relative to the motion using the source apparatus. The Doppler shift is between this physical source field and receiver. The complete support calculation includes its spectrum, angular distribution, correlations, and material reception; the shift of a single wave component is not the total supporting-power ratio in Eq. (17).

The physical clock change can be tested without a residual propagation delay. If A departs from and returns to B in an approximately uniform ambient region while B remains at the source location, their elapsed times satisfy

$$\tau_A - \tau_B = \int_{T_i}^{T_f} \left[\sqrt{1 - \frac{v(T)^2}{c_0^2}} - 1 \right] dT. \quad (24)$$

The limits T_i, T_f are shared departure and reunion readings. The clocks are together when compared, and their different physical histories produce the accumulated difference. For a changing altitude, the stationary clock factor must also be included. If t_0 denotes the common external comparison time and $dT = f_h dt_0$, the complete rate is

$$\frac{d\tau_A}{dt_0} = f_h S \equiv f_{\text{total}}. \quad (25)$$

Once the total factor is written this way, dividing by γ again would incorrectly give $f_h S^2$. The source factors, velocity response, and measuring standards must remain identifiable throughout the calculation. This is especially important when a receiver returns to its original position: a positional endpoint does not, by itself, specify its velocity, strain, temperature, or all of its stored field energy.

These distinctions supply a practical sequence of checks for a device application. First, verify the source response. Specify the physical environment and determine which spatial, temporal, and directional dependencies belong to it and which belong to the moving receiver. Theorems relating corresponding states constrain that calculation; they do not authorize assigning different external reaction forces during different portions of a stroke. The rotational scattering calculation [6] provides a related example: source angular momentum produces a directional coupling in the receiver Hamiltonian. It is not a free axial reaction that can be added to a translating actuator. Any use of source rotation must retain its source and reaction in the same account.

Second, close the momentum and energy balances for the complete physical assembly. Include the disk, stack, ship, drive, onboard sources, and consistently assigned local field. Let P_{assembly} denote their total momentum and J_{external} the net impulse entering through the system boundary. Then

$$\Delta P_{\text{assembly}} = J_{\text{external}}. \quad (26)$$

Returning internal parts to their initial states cannot generate an assembly impulse when the right side vanishes. Internal dissipation changes the required input energy. Any momentum carried away by emitted radiation or expelled matter, or exchanged with an external field source, belongs

explicitly on the right side. It must be calculated together with its energy cost and the reactions on all source components.

Third, compare with independent evidence. The force comparison made possible by Michelle Broyles challenged the scale of the prediction and prompted examination of assumptions that had survived successive calculations. Checking an application three times is useful when the checks test different vulnerabilities: the physical response, the complete balance, and independent evidence. Reproducing an analytical prescription numerically only checks its implementation. It does not independently verify that the apparatus produces the prescribed load.

For the proposed apparatus, the internal mechanical contribution gives zero net thrust over a complete repetition. The nonzero external impulse was prescribed rather than derived. The advertised 1 N/W benchmark, approximately 300-million-fold photon-rocket advantage, associated lift interpretations, and approximately 82.99 N characterization value are withdrawn as predictions of this device. This is a correction of the stated application, not an experimental null result for other researchers' MEGA devices. No demonstrated modification in this analysis restores the claimed propulsion; a future result must establish an actual external exchange.

6 Conclusion

The error was in interpreting the proposed MEGA drive. This correction does not retract OQG and identifies no error in its scaling or supporting-power theorems, whose statements, assumptions, and proofs remain unchanged. The missing result was the physical source of the phase-dependent external reaction. Correcting the restoration-energy balance and making the load prescription explicit did not supply that result. Internal losses do not preserve an acceleration impulse after the complete apparatus motion is included.

The re-examination adds a clearer procedure for applying OQG. Lifting a body adds gravitational storage while increasing its stationary scale. Accelerating it adds kinetic energy while decreasing its clock and longitudinal comparison factors relative to the physical source environment. The material Hamiltonian carries the same dispersion interaction into free propagation and the response against which applied work changes the motion. Distinguishing total energy from phase rate explains these opposite scale changes without releasing an unearned energy surplus.

Matched material clocks and rulers preserve the local light-speed measurement. In motion, their phase evolution and finite-speed signal comparisons produce the Lorentz relation, with the motion factor counted once. The receiver's velocity dependence must remain in its derivatives, and the complete source and receiver reactions must remain in the conservation balance. Michelle Broyles's contribution, the subsequent review, and the corrected accounting demonstrate the value of independent checks before a conditional calculation is presented as a propulsion prediction.

For the next propulsion study, cold-gas thrusters are beginning to look attractive. A roadster, it seems, has the good sense to bring its own reaction mass.

Statements and Declarations

Funding. This work was self-funded by the author. No funds, grants, or other external support were received during the preparation of this manuscript.

Conflict of Interest. On behalf of all authors, the corresponding author states that there is no conflict of interest.

Author contributions. Todd J. Desiato conceived the OQG program and the material-scaling interpretation, directed the theoretical development, reviewed the calculations and literature, and prepared the manuscript.

Data availability. This theoretical study generated no new experimental or observational datasets. The analytical derivations and operating conditions are contained in the article. Force data supplied by Michelle Broyles are acknowledged as the motivation for the comparison; those data are not reproduced or independently re-analyzed here. The approximately 82.99 N conditional load and the control with that load removed refer to the existing OQG MEGA 35 kHz Characterization model, version 0.2, as described in Section 2.

Code availability. The phase, scaling, and Lorentz-comparison identities can be reproduced directly from the equations in the article without proprietary software. The numerical control discussed in Section 2 uses the existing OQG MEGA 35 kHz Characterization model, version 0.2, with its environmental load disabled and its other stated material and drive parameters retained. No new device-response simulation or experimental-data analysis is claimed.

Ethics approval and consent to participate. Not applicable. This study involved no human participants, human data, animals, or biological material.

Consent for publication. Not applicable.

Use of generative artificial intelligence. The author used OpenAI ChatGPT and Codex for literature discovery, mathematical cross-checking, numerical evaluation, organization, drafting, and editing. Grok was used for a critical review of the earlier MEGA draft. The author is responsible for reviewing the scientific arguments, equations, references, and final text and for the content of the manuscript.

Supplementary information. The correction and the material-response derivations are included in the main text. No separate supplementary files accompany this article.

References

- [1] Desiato, T.J.: *Mach Effect Gravity Assist Warp Drive in Operational Quantum Gravity*. Preprint, version 0.8 (21 October 2026). Propulsion interpretation corrected by the present article.
- [2] Desiato, T.J.: *Mach Effect Gravity Assist Warp Drive in Operational Quantum Gravity*. Preprint, version 0.7 (2026). Earlier version of [1].
- [3] Desiato, T.J.: *Operational Quantum Gravity: From Electromagnetic Power Balance to Gravitational Response*. Preprint, version 2.3 (2026).
- [4] Desiato, T.J.: *Matter Wave Scaling and Recoverable Energy Storage in Operational Quantum Gravity*. Preprint, version 1.5 (21 October 2026).
- [5] Desiato, T.J.: *Scattering as the Cause of Gravity in Operational Quantum Gravity*. Preprint, version 1.0 (22 October 2026).
- [6] Desiato, T.J.: *Rotational Scattering and Frame Dragging in Operational Quantum Gravity*. Preprint, version 0.4 (22 October 2026).
- [7] Desiato, T.J.: *OQG MEGA 35 kHz Characterization*. Calculation record, version 0.2 (2026). The conditional propulsion result is withdrawn as described in Section 2.