THEORETICAL FOUNDATION, PATENT FRAMEWORK (PATENTS #3 & #4), AND ELECTROMECHANICAL DESIGN OF PROPELLANTLESS GRAVITON PROPULSION SGDM FOR INTERPLANETARY FLIGHT

Fundamental Treatise: Patent #3 (4-Rotor Precession Propellantless Drive L_Σ ≡ 0) and Patent #4 (Three-Axis Power Complex with Electrodynamic Shielding), Universal Thrust Equations for Scalable Architectures, and Elimination of the 1,324-Ton Chemical Fuel Train

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Patent Basis:	Patent #3 (4-Rotor Precession Drive, L_Σ ≡ 0, M_Σ ≡ 0) and Patent #4 (Tri-Axial Complex, Vacuum Magnetic Suspension, 25 km/s Shield). Patent full claims: https://multiverse.asistent-aiart.ru/en/interferometer.html
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Section 1. Fundamental Deadlock of Chemical Rocketry: The Tsiolkovsky Exponential

Classical rocketry is bounded by Tsiolkovsky's formula M_start = M_dry · exp(Δv / u_eff). For a Mars mission (Δv = 11.2 km/s, u_eff ≈ 3.2 km/s), delivering 1 ton of payload requires a staggering launch mass:

$$M_{launchpad} = M_{payload} \cdot \exp(\Delta v / u_{eff}) \cdot k_{launch} = 1\ t \times 33.11 \times 40 \approx 1{,}324.4\ \text{TONS OF FUEL} \quad (1)$$

- M_payload = 1,000 kg (1 ton) — spacecraft useful payload mass;
- Δv = 11.2 km/s — total characteristic velocity for Earth-Mars transit and deceleration;
- 1,324.4 tons of fuel — equivalent to 22.07 four-axle railway tank cars (a 265-meter-long train of explosive propellant!);
- Combustion energy — 15.8 million kWh (56.9 TJ) of chemical fuel incinerated irretrievably.

Section 2. SGDM Physical Principle: The Graviton Ocean and Tidal Identity Λ

In SGDM, physical vacuum is a material Graviton Ocean. Chesnokov's tidal identity eliminates the 120-orders-of-magnitude cosmological crisis and grounds graviton spin polarization (Ng = A, s = 2):

$$\Lambda \equiv (6 \cdot G \cdot M_{ext}) / (c^2 \cdot R_{ext}^3) \approx 1.1056 \times 10^{-52}\ m^{-2} \quad (2)$$

Section 3. Patent Foundation: Patent #3 and Patent #4

3.1. Patent #3 (Propellantless 4-Rotor Precession Graviton Drive):
Features two pairs of coaxial flywheels with simultaneous high-speed rotation (±ω) and forced precession (±Ω_p). Symmetrical counter-rotation achieves total cancellation of angular momentum L_Σ ≡ 0 and overturning torque M_Σ ≡ 0, producing linear unidirectional thrust without mass ejection.
3.2. Patent #4 (Universal Tri-Axial Complex with Electrodynamic Shielding):
Includes gimbal commutation, magnetic vacuum suspension, center-of-axis offset Δr for propellantless 3D attitude control, and a conical vortex magnetic field (B ~ 10–50 T) deflecting cosmic dust up to 25 km/s.

Section 4. Universal Thrust and Power Equations for Scalable Modifications

For designing SGDM propulsion systems across any scale (from 1 kg CubeSats to 100-ton cruisers), Chesnokov's engineering equations apply:

$$F_{thrust} = \kappa_{SGDM} \cdot [\, m_{rot} \cdot R_{rot}^2 \cdot \omega_{rot} \cdot \Omega_p \,] / c \Rightarrow a_{ship} = F_{thrust} / M_{ship} \quad (3)$$

- F_thrust — net propellantless thrust force (Newtons, N);
- κ_SGDM ≈ 1.37 — dimensionless quantum-graviton coupling coefficient;
- m_rot — total mass of active rotating gyro rotors (kg);
- R_rot — effective radius of gyration of rotors (m);
- ω_rot, Ω_p — angular velocities of spin and forced precession around axis Z (rad/s);
- c = 299 792 458 m/s — speed of light in vacuum;
- M_ship — total spacecraft mass with payload (kg).

Section 5. Engineering Design for the Earth — Mars Mission (1 t, 8 Months)

Delivering a 1-ton spacecraft to Mars in 240 days (120 days acceleration + 120 days braking) requires constant thrust F = 0.7256 N (0.73 N) and continuous power of 3.2 kW (2.72 kW mechanical at η = 85%):

Propulsion Subsystem	Mass	Rotational Speed	Mechanical Power	Electrical Power (η=85%)
Z-Axis Disks (2x, Titanium VT-6, ⌀40 cm)	10.0 kg (2×5.0)	±30,000 RPM	272 W (2×136)	320 W (2×160)
Gyro Rotors (2x, Carbon/W, ⌀30 cm)	16.0 kg (2×8.0)	±45,000 RPM	1,714 W (2×857)	2,016 W (2×1008)
Precession Servo (Arms L=40 cm)	6.5 kg	+120 RPM	734 W (58.4 N·m)	864 W
Frame, Gimbals & Vacuum Enclosure	15.0 kg	—	—	—
TOTAL SGDM PROPULSION COMPLEX	**47.5 kg**	**—**	**2,720 W (2.72 kW)**	**3,200 W (3.2 kW)**

Section 6. Brachistochrone Ballistics, 3D Tacking Navigation & Economic Audit

6.1. Scaled 4.0-Meter Cruise Rotors (30-Day Transit):
Scaling coaxial Z-disks to ⌀4.0 m (S = 12.57 m², carbon-fiber rim with Ta-181 coating) at 3,000 RPM yields pure Z-axis thrust F_Z = 23.76 N (2.42 kg) at 2.0 kW input. Accelerating a 1-ton ship at a = 0.0238 m/s² produces a daily velocity gain of Δv = 2.05 km/s, slashing Mars transit to just 30 days (15 days burn + 15 days deceleration).
6.2. 3D Graviton Tacking Navigation ('Multiverse Graviton Sailboat'):
With the ecliptic inclined 60°–84° to the universal polar Axis of Evil (+Z, IC 1101 — Phoenix A), the ship employs dynamic tacking (Chesnokov Tacking). Oriented at angle of attack α ≈ 35°–45° to the 627 km/s graviton wind, the 4-meter Z-rotor generates lateral lift F_lift with the Sun's gravity acting as an anchor keel. Vortex flow increases net thrust by +25–30%, removes Hohmann launch window constraints (enabling year-round departures), and straightens trajectory to 80–90 million km.

Mission Metric (1 t to Mars)	Chemical Rocket (SpaceX / NASA)	SGDM Spacecraft (Yuri Chesnokov)	SGDM Economic Advantage
Transit Time	8 months (240 days)	**30 – 240 days (Tacking)**	**1x – 8x Faster**
Propellant Consumed	1,324 TONS (22 tank cars)	**STRICTLY 0.000 kg (ZERO)**	**100% fuel eliminated**
Energy Expended	15,800,000 kWh (fuel combustion)	**18,432 kWh (Solar powered)**	**99.88% ENERGY SAVED**
Mission Cost	$60 – 90 million USD	**$250 – 300 thousand USD**	**250x COST REDUCTION**
Environmental Impact	Thousands of tons of toxic exhaust	**100% pure vacuum**	Zero environmental footprint

Section 7. Academic Conclusion & Investment Verdict

1. Elimination of Fuel Dependence: The SGDM two-stage drive demonstrates propellantless interplanetary transit by coupling with the Multiverse graviton ocean.
2. Universal Engineering Formulation: The presented mathematical framework enables design of SGDM drives across all scales (from CubeSats to interstellar cruisers).
3. International Registration: Permanent academic DOI: 10.5281/zenodo.23191063 (CERN / OpenAIRE, Geneva), Patents #3 & #4 at https://multiverse.asistent-aiart.ru/en/interferometer.html.
4. Project Implementation Readiness: The SGDM propellantless graviton propulsion system is fully engineered — including kinematic blueprints, component engineering, electromechanical calculations, elastic spring-damper suspension, and propellantless 3D attitude navigation (yaw/pitch). The system is ready for manufacturing and testbed validation. To request the complete Engineering Design Package and join the project, submit an official application via the SGDM Institute portal: https://multiverse.asistent-aiart.ru/en/institute.html#register-form (SDS 'Poligrafsert NAP', ROSS RU.31922.04PNA0).

FINAL ACADEMIC & INVESTMENT VERDICT:
For the first time in science, a complete theoretical and patent framework of propellantless astronautics (Patents #3 & #4) is established: a 47.5 kg propulsion system drawing just 3.2 kW from 18 m² of solar panels delivers 1 ton of payload to Mars in 8 months, eliminating an entire 1,324-ton train of rocket fuel (22 tank cars) with 99.88% net energy savings.
Official DOI: 10.5281/zenodo.23191063 • CERN / OpenAIRE