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RESEARCH ARTICLE

Time Tacking: Practical Approach to Interstellar Travel

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ABSTRACT

This article introduces a groundbreaking approach to interstellar travel by drawing an analogy between a nautical manoeuvre called tacking and a proposed technique for traversing vast interstellar distances, that we termed "time tacking." In sailing, tacking allows a vessel to move against the wind through a series of zig-zag movements. Similarly, in space travel, a comparable manoeuvre will enable spacecraft to navigate the challenges of relativistic time dilation by entering a "mirror universe" and potentially facilitating transitions into other dimensions. This theoretical framework also provides new insights into black holes, energy transfer, and the preservation of thermodynamic principles across the universe.

The concept of "time tacking" offers a practical method for interstellar navigation, suggesting that alternating between sub-luminous (below light speed) and super-luminous (beyond light speed) velocities near the speed of light can enable precise manipulation of space-time. This manoeuvre allows for controlled departure and arrival times, paving the way for real-time interstellar journeys rather than centuries-long voyages requiring cryogenic preservation. By leveraging time dilation and future quantum propulsion systems, time tacking presents a revolutionary approach to achieving humanity's ancient dream of reaching the stars. This method renders all previously proposed ideas on the subject obsolete. We are presenting a simple and practical approach to interstellar travel, bringing us closer to the realistic prospect of regular interstellar flights and mass space migration. This paves the way for the creation of new, independent planet-states beyond our solar system.

The integration of Quantum Propulsion Systems with the Time Tacking Technique represents a paradigm shift in deep space transportation. However, the potential impact of quantum propulsion technology extends far beyond aerospace, with the potential to revolutionize global connectivity, redefine air travel, transform aerospace warfare, and radically reshape the political landscape of our world.

This technology offers a profound opportunity for those disillusioned with life on Earth. It provides the chance to leave this planet behind and create new worlds shaped entirely by their unique visions and deepest aspirations.

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1. Introduction

In his earlier work, the author introduced the core principles and potential uses of quantum propulsion systems, explaining their unique mechanics and transformative possibilities [1].

A quantum propulsion system operates by generating a quantum vacuum cocoon around an aerospace vehicle (see Fig. 1). This cocoon disrupts the quantum connections between the vehicle and its surrounding environment, isolating it from the influence of physical fields and eliminating dynamic resistance to its airframe [2]. The result is a layer of absolute vacuum that serves as both a protective barrier and a propulsive force. Within this vacuum layer, no physical object or field can exist in its usual form. This breakthrough removes traditional speed limits and significantly enhances the vehicle's manoeuvrability and lifting capability, surpassing conventional designs.

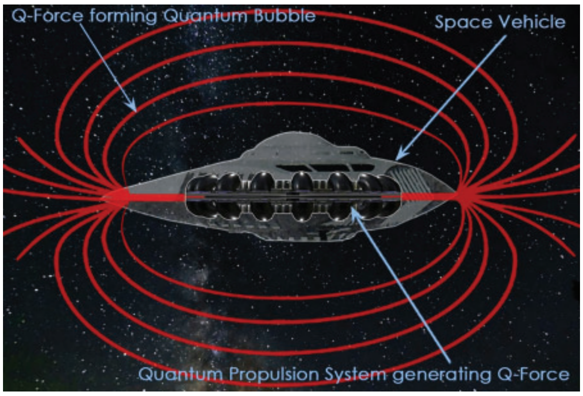

Fig. 1. The Q-Force generator enables us to control the vehicle's mass by forming a quantum vacuum cocoon around it.

The quantum cocoon vacuum concept is not limited to space travel; it can also operate effectively in the atmosphere and underwater. Vehicles utilizing this technology could potentially traverse thousands of miles in seconds, regardless of the environment.

Surprisingly, the concept of quantum propulsion was inspired by nature: many insects and spiders use similar electromagnetic mechanisms, creating natural quantum cocoons that allow them to glide through the air with minimal resistance [3]. Insects achieve this by generating an electrical potential difference between their bodies and their wings or antennae, forming a quantum cocoon that enables flight while bypassing conventional aerodynamic laws. For instance, spiders use their quantum cocoon to travel long distances, displaying their ability to fly without any visible mechanical propulsion system.

Our engineering team is the first to replicate this natural phenomenon using electromechanical devices. We have been working on this subject for several decades and are now focused on developing a reliable theoretical framework to explain and describe these phenomena. Our experiments have provided a deeper understanding of matter and mass, forming the foundation of the 'Quantum Windage Theory'.

According to this theory, material objects are composed of quantum particles formed by high-frequency oscillations of physical fields. These oscillations generate gravitational connections between particles, defining the properties of matter and creating an invisible web of internal gravitational links. When an object moves, this web encounters resistance from the universe's static fields of the same nature, perceived as inertia and conventionally defined as mass.

In our experiments with mass control, we discovered and generated a new form of energy, which we have named 'Q-Force.' Q-Force disrupts the oscillations of physical particles and fields around the vehicle, weakening or even completely dissolving normal quantum connections in its surrounding environment. This effect eliminates dynamic and gravitational resistance, enabling the vehicle to move freely with minimal propulsion input and potentially reach or even exceed the speed of light. (see Figs. 2 and 3).

This vehicle still reflects massless particles, such as photons, making it visible. However, it completely distorts the electromagnetic connections between the particles of the surrounding matter, making it dynamically transparent—i.e., providing no effective resistance to this flying vehicle.

The quantum vacuum cocoon concept introduces a revolutionary approach to designing aerospace propulsion systems. A vehicle generating 100% Q-Force becomes immune to external quantum forces, effectively eliminating its mass and rendering it invisible to any form of physical matter or fields, including planetary gravity. Thus, if the gravity cannot detect the mass of the vehicle, it does not recognize it as a material object. Inside the quantum cocoon, the vehicle remains stationary while the cocoon itself moves through space, enabling instantaneous acceleration and deceleration without harmful G-forces effect on passengers (see Fig. 4).

Unlike current efforts by some aerospace firms focused on counteracting gravity, our approach targets the control or elimination of the spacecraft's mass itself. This breakthrough concept paves the way for a future where distance and time are no longer obstacles, unlocking new opportunities for space exploration and air travel.

However, despite the advantages of quantum propulsion, it does not provide an immediate solution for interstellar travel. Here is why: if a spacecraft using a quantum propulsion system were to travel to Gliese 12B, a habitable planet located 40 light-years away, it would take 40 years to reach the destination according to Earth's calendar, even if it travelled near the speed of light. However, due to time dilation, the journey would only take about 30 minutes for the crew inside the spacecraft [4].

If, upon arrival, the crew spent a few hours on Gliese 12B and then returned, they would arrive back on Earth in the year 3004—80 years after their departure, despite experiencing only a few hours of

Fig. 2. Fully assembled Q-force generator: top view.

Fig. 3. Fully assembled Q-force generator: bottom view.

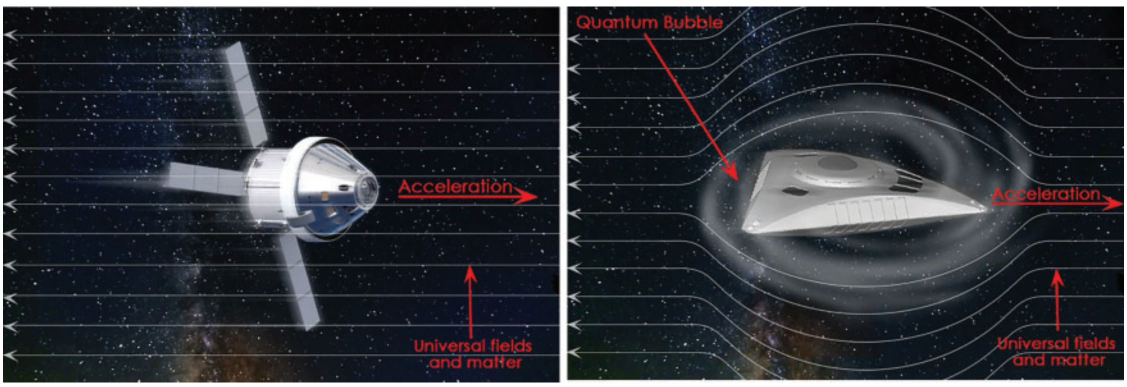

Fig. 4. Conventional spacecraft (*left*) vs. quantum propulsion spacecraft (*right*): The quantum propulsion system allows it to 'glide' within the universal "soup" of physical fields and forces, hiding its mass from them.

travel time. This means they effectively travelled 80 years into the future. Such long-time gaps make any attempts of interstellar flights impractical, as we cannot afford to wait several generations for the

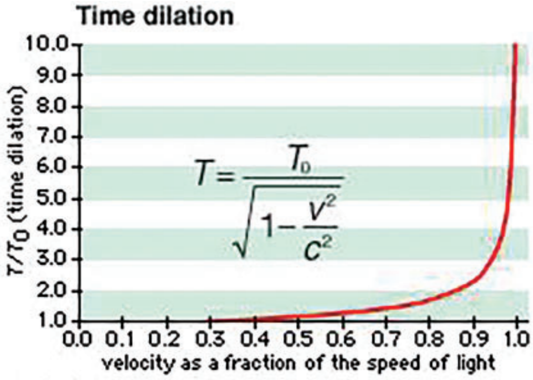

Fig. 5. Correlation between the speed of space vehicles and the time dilation experienced inside them. ©2006 Encyclopaedia Britannica, Inc.

results of a single expedition. Moreover, most target planetary systems are hundreds or thousands of light-years away, drastically increasing travel time.

Can we solve this problem and significantly shorten interstellar travel time? Yes, we can! We can achieve this by utilizing the time dilation effect in combination with a space navigation technique we have termed **"time tacking"**.

2. Method: Harnessing Time Dilation for Space-Time Navigation

In the framework of special relativity, time dilation occurs when an object approaches the speed of light. The Lorentz factor, which depends on the object's velocity relative to the speed of light, dictates the extent of this time dilation [4]. For a stationary observer on Earth, time appears to slow down inside a spacecraft as it nears light speed—seconds stretch into minutes or even hours. Here is the classical Einstein/Lorentz equation and graph that clearly demonstrates this effect (see Fig. 5):

$$T = \frac{T'}{\sqrt{1 - \frac{v^2}{c^2}}} = QT$$

where:
c is the speed of light,
v is the actual speed of the vehicle,
T′ is the actual time at static observer point or UTC time,
T is altered or slowed down time inside of the vehicle,
Q is the Lorentz Factor coefficient as the indicator of actual time dilation.

Hence, the actual Lorentz Factor coefficient can be calculated as:

$$Q = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

However, if a spacecraft could surpass the speed of light, relativity suggests it would encounter even stranger effects. Simple calculations suggest that exceeding this barrier will project the craft into a mirror universe where time, mass, and energy exhibit inverted properties. This inverse state, derived from classical Einsteinian equations, implies that within the mirror universe, time would flow backward, and both the mass and kinetic energy of the spacecraft would take on negative values, as would the perceived geometry of the craft itself [5].

Thus, while moving into the future at near the speed of light within the mirror dimension, the vehicle will simultaneously travel back in time relative to our universe at an accelerated rate (see Fig. 6).

It appears that when the spacecraft surpasses the light-speed threshold, it creates a small artificial black hole, enabling passage into a mirror universe. This concept suggests that black holes, which appear to absorb matter and energy without conversion or trace, might instead serve as conduits between our universe and a mirror counterpart [6].

The first law of thermodynamics dictates that energy cannot be destroyed or vanish without trace [7], posing an enigma in the context of black holes: Where does the absorbed energy and matter go? The mirror universe hypothesis offers a plausible answer, suggesting that black holes function as bridges, transferring matter and energy to an alternate dimension where time flows in reverse [8].

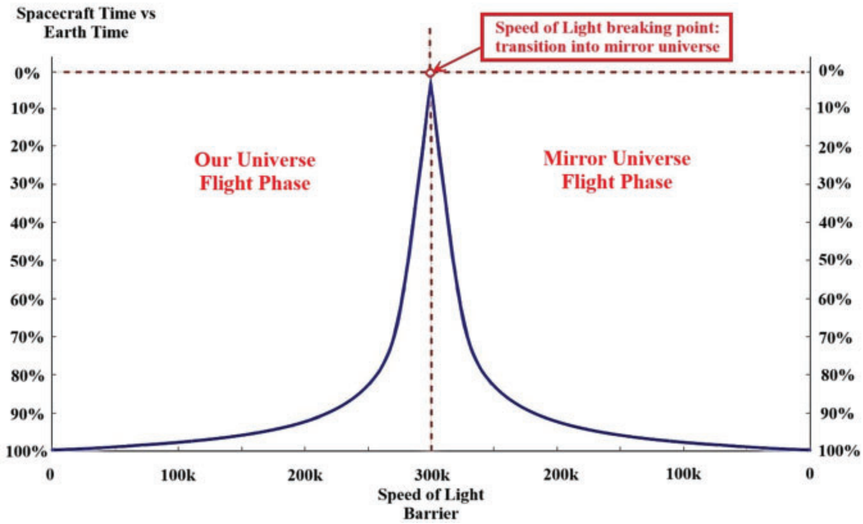

Fig. 6. The graph illustrates the correlation between spacecraft speed and time dilation experienced inside the vehicle across both universes, expressed as a percentage of normal (Earth) time.

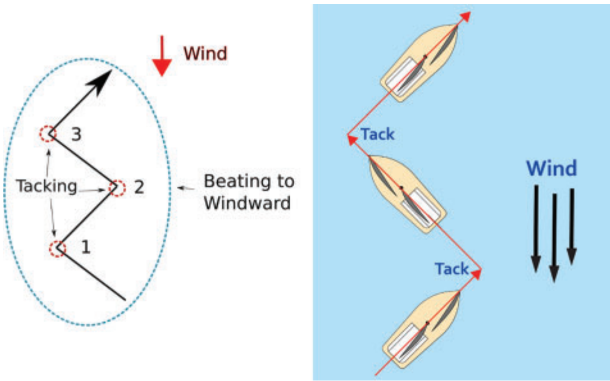

Fig. 7. Tacking is a manoeuvre that allows boats to sail against the wind by turning the vessel at specific tacking points.

The thermodynamic principle of energy conservation supports the hypothesis that black holes are not merely points of infinite density and gravitational pull but are instead passageways through which our universe exchanges matter and energy with its mirror universe. As matter crosses the event horizon, it undergoes an inversion, manifesting as negative energy and negative mass in the alternate dimension.

This perspective addresses a longstanding paradox in astrophysics: if black holes consume matter and energy, how is thermodynamic balance preserved? The mirror universe model, supported by formal logical deduction, proposes that kinetic energy is not lost but instead flows into the opposing mirror universe, ensuring energy conservation remains intact across both universes. This evidence strongly supports the existence of a mirror universe where time runs backward relative to our universe.

2.1. Results: Time Tacking as a Practical Strategy for Interstellar Travel

This chapter explores how a combination of quantum propulsion and time tacking can enable spacecraft to navigate both space and time, achieving precise arrival times relative to departure — and even potentially traveling backward in time. By leveraging the principles of special relativity and time dilation, time tacking paves the way for rapid and flexible space travel, challenging the constraints of fictional interstellar voyages.

Tacking, as many of us know, is a sailing manoeuvre where a boat moves against the wind by zigzagging through a series of turns. This technique keeps the sails positioned at the optimal angle relative to the wind while making 90-degree turns at specific tacking points, allowing the boat to harness wind power effectively against its direction (see Fig. 7). As illustrated, this method achieves what seems to be logically impossible—progressing directly into the wind by altering the boat's direction at predefined points. We propose applying a similar concept to interstellar travel, positioning it as the key solution to this challenge. This leads us to introduce our "time tacking" technique.

For decades, science fiction has depicted interstellar journeys as spanning centuries, often requiring cryogenic suspension to preserve the lives of the crew. However, this scenario presents an unrealistic solution due to the inevitable aging and degradation of spacecraft components over time, which would render any vessel unusable within a century. In contrast, the "time tacking" flight technique offers a

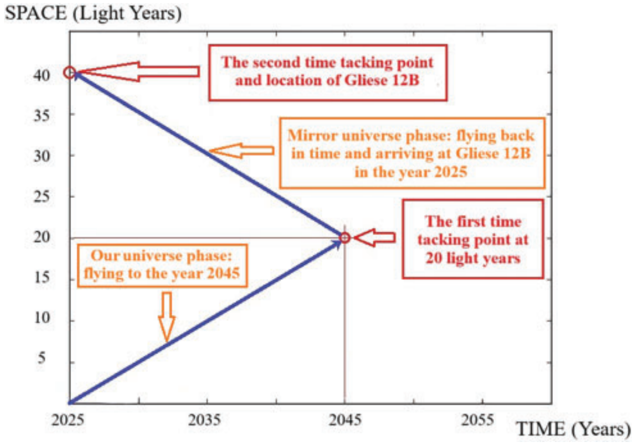

Fig. 8. Two Time Tacking manoeuvres allow our spacecraft to arrive at the habitable planet Gliese 12B on the same day as its departure, even after traveling 40 light-years through space and time.

groundbreaking model for real-time interstellar travel. By oscillating around the light-speed threshold, this method allows for precise control over space-time during the journey.

As mentioned in the previous chapter, time dilation, as described by special relativity, causes time to slow for an object nearing the speed of light. For a stationary observer on Earth, time aboard a near-light-speed spacecraft appears to progress more slowly. By hovering at speeds close to, slightly below, or just above the speed of light, a spacecraft can "tack" through time, adjusting its arrival in the future or past by manipulating space-time intervals.

For instance, consider our plan to explore the star Gliese 12B, located forty light-years away from our Sun. To reach it, we would first travel twenty light-years toward Gliese 12 at near-light speed. Then, we would accelerate to break the light-speed barrier, transitioning into a "mirror universe" and performing a 180-degree turn, thus still flying towards our target destination located on the opposite side of the light barrier. We would then continue traveling in this direction for another twenty light-years. This manoeuvre effectively moves us back 20 years in time, compensating for the 20 years the spacecraft has advanced into the future previously. After completing this part, we do the second time tacking manoeuvre. We accelerate attaining the speed of light and break it, thus re-enter our universe, and find ourselves near the Gliese 12 planetary system—on the very same day we began our journey (see Fig. 8).

Next, we could commence slower manoeuvring to approach and land on the planet Gliese 12B. After spending a few hours on its surface, we would return to Earth using the same technique. In essence, we could depart for Gliese 12B after breakfast and be back on Earth in time for dinner.

Time dilation, combined with the time tacking space flight technique, naturally provides a form of 'time travel.' However, in practice, we are merely interacting with time periods moving in opposite directions in two distinct parts of our universe, supporting the age-old philosophical concept that time is not absolute. On a universal scale, time is nothing more than an illusion.

For example, in our first scenario, after a thirty-minute journey in this mirror universe, traveling back in time, the crew could re-enter our universe at light speed, arriving in the present year 2024 as if no time had passed. In a different scenario, a prolonged stay of sixty minutes in the mirror universe could enable a return to Earth in the year 1924, effectively demonstrating controlled backward time travel.

This technique would allow interstellar travellers to "tack" through time adjusting their spatial position, enabling them to reach any location or moment on their own schedule. Unlike the dramatic sacrifices depicted in science fiction, time tacking envisions a future where a journey to distant stars could take only a few hours.

As you can see, the time tacking method redefines interstellar travel as a manageable and efficient process, leveraging the natural laws of physics to eliminate the need for complex solutions like cryogenic suspension or multigenerational space habitats. By adopting this technique, space travellers could navigate the cosmos at will.

3. Conclusions

The **Time Tacking technique**, poised to become the standard for interstellar navigation, unlocks an extraordinary possibility: the ability to complete any journey across the stars in just 24 hours, should we so desire. This manoeuvre allows the spacecraft's crew to control not only where they arrive but when, adjusting for a specific desired date or time.

Imagine traveling at the speed of light toward the distant star Gliese 12—a voyage that would traditionally take 40 years each way. By the time you return, eighty long years would have passed on Earth, leaving your loved ones as distant memories.

However, with the revolutionary **Time Tacking technique**, this grim reality is transformed. No longer bound by the relentless march of time, you could return to Earth whenever you choose—even the very next day, or, astonishingly, on the same day as your departure. This simple method obliterates the constraints of time, making interstellar travel an integral part of everyday life.

The advent of **Quantum Propulsion Systems**, combined with the **Time Tacking Technique**, heralds a transformative era in space exploration. This innovation fundamentally challenges conventional perceptions of space travel. Time Tacking not only simplifies the daunting reality of space voyages but also paves the way for a new paradigm where cosmic distances are traversed with the ease and reliability of a routine journey across Earth's continents. This elegant solution redefines the boundaries of human capability, turning space travel from a formidable challenge into a manageable and pleasant endeavour.

The **Quantum Windage Theory**, when paired with the revolutionary **Space-Time Tacking Navigation Technique,** forms the cornerstone of an entirely new discipline we proudly call **Quanto-Dynamics**. This groundbreaking field is set to become the foundation of our understanding and mastery of quantum propulsion-powered flight. It promises to chart the course for humanity's exploration and expansion across the cosmos for millennia to come, shaping the very future of space travel and exploration with unparalleled precision.

With the integration of Quantum Windage Theory and Space-Time Navigation into Quanto-Dynamics, humanity stands at the threshold of unprecedented change. This pioneering discipline will serve as the bedrock of training for future astronauts and aerospace professionals, equipping the next generation of explorers with the essential skills and knowledge to thrive within the boundless reaches of the cosmos.

The promise of becoming a multiplanetary species is no longer a distant dream but an achievable reality. As we embark on this extraordinary journey, we stand ready to unlock new realms of knowledge, expand the horizons of human existence, and claim our place among the stars. The gateway to the cosmos is open—let us boldly step through and seize our destiny!

Conflict of Interest

The author declares that there is no conflict of interest.

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