

# THE SPEED OF WARP ANCESTOR

HUD VELOCITY & SUPERSTRING WARP (SW) NOTATION

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# I

## Base Constant: The Speed of Light

Warp Ancestor defines the speed of light as the fundamental unit of motion:

$$1c = 299,792.458 \text{ km/s}$$

This is the anchor for all warp-era velocity calculations.

# II

## Exponent Notation in the HUD

Warp Ancestor uses exponent notation for:

- velocity readout
- throttle readout

But:

The exponent (n) is a *superstring warp stage*, not a mathematical power.

$$1n = 1c = 299,792.458 \text{ km/s}$$

This preserves dramatic notation without implying impossible speeds.

# III

## Superstring Warp Factor (SWn)

The in-game Superstring Warp factor multiplies  $c$  directly:

$$1SWn = 1 \times 1n \times 1c$$

This is the raw warp factor before scaling to the simulation grid.

# IV

## Simulation Distance Scaling

Warp Ancestor uses a physically grounded scale:

$$7.462686 \times 10^{-5} \text{ AU} = 11.5 \text{ km per Unity unit}$$

So:

$$1SWn = \frac{1}{11.5} \text{ km} \times 1n \times 1c$$

$$1SWn = 0.0869 \text{ km} \times 1n \times 1c$$

This ensures that warp speeds remain coherent with the simulation's spatial scale.



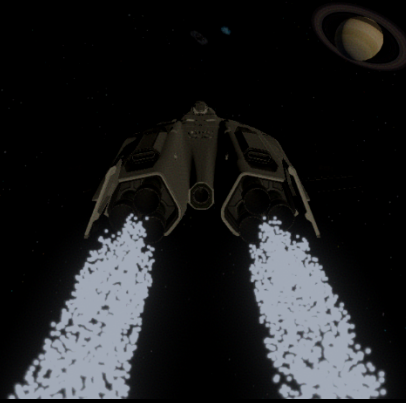
## Superstring Burns (Acceleration Curve)

Superstring burns apply controlled multipliers via an acceleration curve.

This is how the HUD reaches values like:

- $36^5$
- $1300^5$

...without implying literal exponentiation.



## ■ LOW-END SWn EXAMPLE (Warp One Starting Spaceship)

Base engine velocity:

$$36 \text{ km/s}$$

Scaled velocity:

$$36 \times 0.0869 = 3.1284 \text{ km/s}$$

Superstring stage 5:

$$5n = 5 \times 299,792.458 = 1,498,962.29 \text{ km/s}$$

Final velocity:

$$36^5 = 3.1284 \times 1,498,962.29$$

$$36^5 = 4,689,353.628 \text{ km/s}$$

This is the low-end warp velocity for the base ship.



## ■ HIGH-END SWn EXAMPLE (Arcus Ascendant)

Base engine velocity:

$$1300 \text{ km/s}$$

Scaled velocity:

$$1300 \times 0.0869 = 112.97 \text{ km/s}$$

Superstring stage 5:

$$5n = 1,498,962.29 \text{ km/s}$$

Final velocity:

$$1300^5 = 112.97 \times 1,498,962.29$$

$$1300^5 = 169,337,769.9013 \text{ km/s}$$

This is the high-end warp velocity for the Arcus Ascendant.



## ■ SOLAR SYSTEM SCALE (For Player Context)

Neptune average distance from Sun:

4.5 billion km

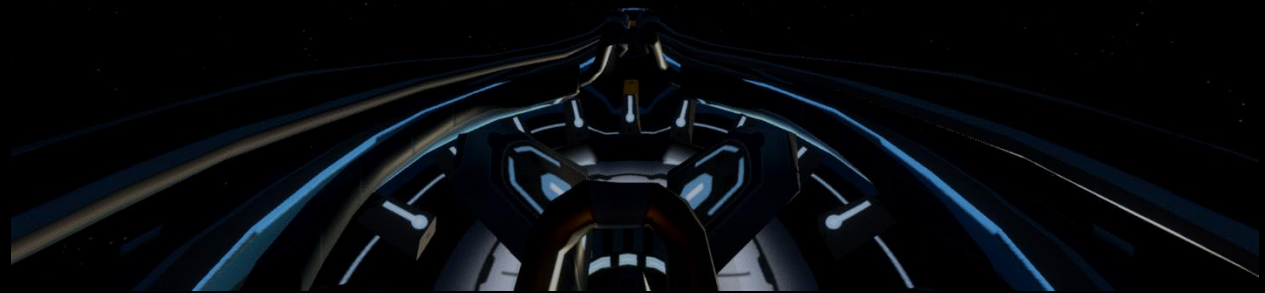
Pluto average distance from Sun:

5.9 billion km

Opposite-side alignment:

$4.5 + 5.9 = 10.4$  billion km

This is the maximum meaningful traversal distance inside the Solar System.



## ■ TRAVERSAL TIME AT MAXIMUM SWn (Arcus Ascendant)

At:

$$1300^5 = 169,337,769.9013 \text{ km/s}$$

Time to cross:

10.4 billion km

$$t = \frac{10,400,000,000}{169,337,769.9013}$$

$$t \approx 61.41 \text{ seconds}$$

→ The fastest ship in Warp Ancestor can cross the entire Solar System in ~61 seconds; increased by burn gauge time and recharge times as well as course correction and re-alignment out of warp.

## ■ Why Crossing the Solar System Takes ~5 Minutes (Even at Maximum SW<sup>5</sup>)

Warp Ancestor's velocity system is grounded in real physics, but the Solar System itself is not static. Every planet, dwarf planet, moon, and Kuiper Belt object is moving at high orbital velocities – often tens of thousands of km/s relative to the player's trajectory.

Because of this, the traversal time is influenced by more than raw warp speed.

Here's the clean explanation:

### 🌀 1. Celestial Bodies Are Moving Away from You

Even at superstring stage 5, the ship is chasing targets that are:

- orbiting the Sun
- drifting outward
- shifting position during the burn
- moving at high tangential velocities

This means the effective distance is always slightly larger than the static ephemeris value.

You're not flying across a map. You're flying across a moving system.

## ⚡ 2. Superstring Burns Require Charge Time

Warp Ancestor uses multi-stage superstring burns:

- Stage 1 → ignition
- Stage 2 → stabilization
- Stage 3 → resonance
- Stage 4 → compression
- Stage 5 → full superstring alignment

Each burn requires:

- charge time
- stabilization
- cooldown
- re-alignment

This adds real-time overhead between bursts of maximum velocity.

### 3. Double-Burn Maneuvers Add Delay

To maintain stability at extreme  $SW^5$  velocities, the fastest ships must occasionally perform:

- double burns
- course corrections
- warp-bubble re-alignment

These are micro-interruptions, but they accumulate over a 10-billion-km traversal.

#### 🕒 4. The HUD Shows Instantaneous Velocity, Not Mission Time

HUD readout (e.g., 1300<sup>s</sup>) shows:

- the current warp factor
- the current superstring stage
- the instantaneous velocity

But mission time includes:

- acceleration
- deceleration
- burn-charging
- orbital drift
- course correction

So the HUD speed and the actual traversal time are not identical.  
This is intentional and realistic.

## ■ Why It Takes About 5 Minutes to Cross the Solar System

Even at maximum Superstring Warp (SW<sup>5</sup>), the Solar System is not a static map. Planets and dwarf planets are moving targets, drifting away at high orbital velocities. Your ship must also perform multiple superstring burns, charge cycles, and warp-bubble realignments during the journey.

The HUD shows your *instantaneous* warp velocity. The mission timer reflects the *real traversal time* across a moving, dynamic Solar System.

As a result, crossing the full 10.4-billion-km span of the Solar System takes about five minutes in the fastest vessel.

## VII. Standard and Superstring Transition (The ontological perspectives)



**A SIMPLE LEFT CTRL TOGGLE BETWEEN SUPERSTRING TRANSITION MODE AND STANDARD TRANSITION REINFORCES ONE IMPORTANT THING UNDER THE HOOD:**

1. STANDARD TRANSITION (STARTING MODE): TIGHT CAMERA FOLLOW OF YOUR SHIP. YOUR CONSCIOUSNESS HOVERS JUST OUTSIDE. LIKE A GUARDIAN ANGEL...
2. SUPERSTRING TRANSITION (TOGGLE IN AND OUT OF WITH LEFT CTRL): SIGNIFICANTLY REDUCES CAMERA FOLLOW SPEED. YOUR SHIP IS OUTRACING YOUR PERSPECTIVE.

COMBINE WITH MOUSE ZOOM USING THE MOUSE WHEEL TO VIBRATE THROUGH TIME.