

chems on Urth and a FTL Whorl

The Urth list — 7 messages, 3 voices, 16 Aug 2003

<https://urth.darkrealm.vip/thread/urth/4169>

Exported from an unofficial mirror of a public mailing list. Copyright in each message remains with the person who wrote it. Email addresses are obscured as `user at host`, the form the original archive published. This file was rebuilt from parsed fields rather than retained headers, so it is faithful in content but not byte-exact.

James Wynn — 16 Aug 2003, 17:50

Ash said:

Chems wouldn't be found on Urth at all if they were invented on board the Ship. Reference Sidero's claims concerning this. Jonas was an exception, and he clearly came from the Ship rather than Urth.

Crush responds:

Are you saying that the lack of chems in tBotNS is an argument that they all from "the Ship"? But Marble originated on Urth -- in tBotLS she says she saw the original Short Sun. And Kypis seems to recall them on Urth.

Don said:

I'm not qualified to debate this but I think the general consensus is that the Whorl was a sub light speed ship. But I personally think it somehow attained light speed or greater at some point.

Crush responds:

I think the argument is that a generational ship is unnecessary for a FTL ship. If it can travel at the SoL, then any trip would be instantaneous for the passengers.

-- Crush

matthew.malthouse — 18 Aug 2003, 09:10 · follows James Wynn

On 16/08/2003 18:50:29 "James Wynn" wrote:

Crush responds:

I think the argument is that a generational ship is unnecessary for a FTL ship. If it can travel at the SoL, then any trip would be instantaneous for the passengers.

Nit-pick. Any part of the voyage at the speed of light would be instantaneous for the passengers.

Any requirement for acceleration to or deceleration from that speed would occasion subjective duration for those aboard. Viz the light-huggers of Alastair Reynolds trilogy.

More "speed of light" isn't sufficient. A 30 light year journey would still take minimum 30 years in the external time frame. Practically speaking to make interstellar travel no more an obstacle to empire than say sailing across the Atlantic would require superluminal travel and I'm not sure we even have a theory to suggest what subjective duration would be for those concerned.

Matthew

Michael Buice — 18 Aug 2003, 15:44 · follows matthew.malthouse

On Monday, August 18, 2003, at 04:10 AM,
matthew.malthouse at guardian.co.uk wrote:
Any requirement for acceleration to or deceleration from that speed
would
occasion subjective duration for those aboard. Viz the light-huggers
of
Alastair Reynolds trilogy.

Strictly speaking there are only technological barriers preventing the subjective duration from being as small as desired. Practically speaking, however, I can only offer a "yup, what he said." Acceleration would be the difficult engineering feat.

More "speed of light" isn't sufficient. A 30 light year journey would still take minimum 30 years in the external time frame. Practically speaking to make interstellar travel no more an obstacle to empire than say sailing across the Atlantic would require superluminal travel and I'm not sure we even have a theory to suggest what subjective duration would be for those concerned.

We do, however, have a theory that says superluminal travel completely wrecks causality. To my knowledge, no satisfactory solution outside polysyllabic vociferation or invoking General Relativity in weird and clever ways is known.

Michael

James Wynn — 18 Aug 2003, 18:05 · follows Michael Buice

Matthew Malthouse wrote:
Any requirement for acceleration to or deceleration from that speed would occasion subjective duration for those aboard. Viz the light-huggers of Alastair Reynolds trilogy.

Then Michael Buice wrote:
Strictly speaking there are only technological barriers preventing the subjective duration from being as small as desired. Practically speaking, however, I can only offer a "yup, what he said." Acceleration would be the difficult engineering feat.

Crush seeks clarification:
Okay. Are ya'll saying that a generational ship *would* be required for FTL travel?

Either way, the One Ship theory would not be bolstered since it would require endless more groundless hypothesizing to imagine why the Cargo should be transported generationally on Tzadkiel or why it would take hundreds of years for them to arrive. Or how the ship got so out of control that orbited the Green/Blue system for 30 years without unloading the Cargo and why it hung around the system for another 30 years after unloading.

But... it would not prevent a my posit that the Whorl *could* be the primitive, infantile Tzadkiel. OTH that sort of theory is helped mostly by limited information, because of the inclination to recycle and re-rig the data available.

-- Crush

Michael Buice — 18 Aug 2003, 18:59 · follows James Wynn

On Monday, August 18, 2003, at 01:05 PM, James Wynn wrote:
Crush seeks clarification:
Okay. Are ya'll saying that a generational ship *would* be required
for FTL
travel?

Completely orthogonal question. I'm saying that with sufficient technology to deliver large amounts of power, the generational starship is no longer a realistic story. Although it will seem as if 30 years have passed to any proverbial "Typhon" back on Urth, the ship can travel such that the entire trip takes as few as a couple of seconds to the passengers, acceleration and all. This is essentially a combination of time dilation and Lorentz contraction (and needs a geodesically complete space-time, but nevermind that). Realistically, one would imagine some compromise wherein the generational starship makes more sense and is essentially a big rock traveling at constant velocity through space, not fast enough that the passengers won't still experience a great deal of time (as the, I believe, 500 years or so suggested in Long Sun).

For clarity, all of this is subluminal. Superluminal travel, as I said before, completely wrecks causality and should be left to fuzzy logic and "heavenly" Ships. Put it another way, Tzadkiel (or whoever designed the Ship) would have to know more physics than I do (says the physics grad student).

Michael

matthew.malthouse — 19 Aug 2003, 07:03 · follows Michael Buice

On 18/08/2003 16:44:38 Michael Buice wrote:
On Monday, August 18, 2003, at 04:10 AM,
matthew.malthouse at guardian.co.uk wrote:

Any requirement for acceleration to or deceleration from that speed
would
occasion subjective duration for those aboard. Viz the light-huggers
of
Alastair Reynolds trilogy.

Strictly speaking there are only technological barriers preventing the
subjective duration from being as small as desired. Practically
speaking, however, I can only offer a "yup, what he said."
Acceleration would be the difficult engineering feat.

More "speed of light" isn't sufficient. A 30 light year journey would
still take minimum 30 years in the external time frame. Practically
speaking to make interstellar travel no more an obstacle to empire than
say sailing across the Atlantic would require superluminal travel and
I'm
not sure we even have a theory to suggest what subjective duration
would
be for those concerned.

We do, however, have a theory that says superluminal travel completely
wrecks causality. To my knowledge, no satisfactory solution outside
polysyllabic vociferation or invoking General Relativity in weird and
clever ways is known.

Waves Magic Wand

Father Inire's mirrors side-step all these issues.

Matthew

matthew.malthouse — 19 Aug 2003, 07:54 · follows matthew.malthouse

Okay. Are ya'll saying that a generational ship *would* be required for
FTL
travel?

No. But there would likely be a minimum duration involved.

To make things simple assume a Newtonian universe and that the ship accelerates at 1 g - ie in your cigar-with-fins space ship the nose goes forward and the decks are perpendicular to the axis of the ship experiencing a comfortable 1 "gravity"

If a "starship" accelerates at a rate of 1 G , its speed is increasing by 10 m/sec each second. If we divide the speed of light, 300,000,000 m/sec, by 10 m/sec², we find that the time to reach the speed of light is 347 days.

So to get to our closest neighbour, Proxima Centauri which is 1541 light days away you have

347 days accelerating
1194 days cruising at the speed of light
347 days decelerating.

that's 1880 days or five years and two months. In the external time frame

Now the universe isn't Newtonian but I don't have the maths to work out the relativistic effects. However simplest case, at the speed of light there is no duration so (crudely ignore the acceleration phases) the travelers don't experience those 1194 days cruising so internally on the space ship it's something approaching 690 days. [and I have also entirely ignored the fact that at tSoL mass is infinite and would require infinite energy to accelerate to it]

Certainly a generation ship is not required, just something large enough that the passengers don't go mad.

With such a means of transport the establishment of colonies would be eminently practical. But I seriously doubt that an effective empire could be maintained once those colonies were productive. If it takes more than 10 years to send an envoy to the closest star and back political control will fail.

Sidebar: thinking about this it occurs to me that Severian experiences decks with useful gravity parallel to the axis of movement of The Ship Tzadkiel but I can't recall any indication of noticing the Ship's forward motion/acceleration. If that is below the threshold of perceptibility then it's low and attaining the speed of light would be inordinantly long
- unsurprising for a light-sailing vessel. Yet although aboard some time
- long enough to re-write his manuscript - it doesn't seem to me that it was a remarkably extended voyage so I'd have to conclude the Tzadkiel does not rely on attaining the speed of light in order to either travel in time or make the crossing between Briah and Yesod. Therefore there must be a mechanism that is both esoteric and hidden from him (and us). I don't think there is any adequate explanation of Tzadkiel to be had, a wand has been waved. That being the case I suspect that it is entirely reasonable to assume supra-luminal space-flight for the Empire of Man as an inexplicable given - perhaps the backswing of the same wand.

Matthew