

### Offered Title: Sy-Fi, Science, and Silliness

In 1969 I was a sophomore in college and Star Trek, having recently been dumped by the network, was in syndication. So, sometimes friends and I would head to the rec room below our Student Union and watch it at midnight. After studying...of course. Star Trek sent humans traveling about the Milky Way galaxy, and that was *far – out*. The USA had just put men on the Moon, 2001: A Space Odyssey was fresh in our memories, NASA was talking about humans going to Mars. Anything was possible! Boy were we overly optimistic. But hey, we're still talking about going to Mars.

What is possible? Can we achieve a Star Trek like travel itinerary by the 2260s, the time the original Star Trek takes place? Let's look into the future and extrapolate the possibilities.

The technologies necessary for attaining galaxy level travel, not just space travel but space travel in style and comfort, are daunting. I don't think these technologies will arrive independently, rather they will be realized from existing technologies. These technologies might not even be related but someone will see how one will advance the development another. That's how many of our great advancements occur.

First and foremost is speed. We can't discuss galaxy level travel without discussing getting from point A to point B in a reasonable length of time. What's a reasonable time? How about a month. Getting to Proxima Centauri, our nearest star other than the Sun takes about 4 years at the speed of light. How fast do we need to go for arrival in one month? Looks like 48 times the speed of light! In Star Trek terms that's a little faster than warp 3 (39 times faster than light), cruising speed.

100 years ago, our fastest speeds were in the low hundreds of miles per hour. The fastest spacecraft (Parker Solar Probe) will hit 430,000 miles per hour during its close approach to the Sun in 2024. We're making progress but getting to and beyond light speed involves special conditions. Our current understanding is any mass becomes infinitely massive at the speed of light. To approach, hit, or surpass the speed of light mass has to be removed, actually hidden from the equation. We need to avoid becoming infinitely massive during the trip, that might not end well. The starship Enterprise manages this by warping the space around it, so it just rode along within. Special condition: Space is not constrained by the speed of light.

For food, safety, and comfort, the Enterprise has replicators, shields, inertial dampers, the Holodeck. Heck, these should be easy compared with warp speed.

Will we achieve this? Some physicists think it plausible, many think it's a silly dream.

I think traveling in a wormhole sounds silly.

### What's in the Sky?

December 21; pre-dawn; Jupiter and Mercury are close and low in the southeast

December 21; 4:23 pm CST; Winter Solstice, the longest night of 2018