

## **Appendix: Travel and Communication**

Traveling terribly far beyond the limits of your natural homeworld is an increasingly difficult proposition. Even travel to a planetary neighbor can take months with standard propulsion. Even at near light speed, one can expect to take years just to reach the nearest extrasolar star.

This was just as much a problem with the species of the galactic alliance. While the Erani were the first to truly break the bonds of their home system reliably and sustainably, it was the Arcadians that had developed the first “faster than light” drive mechanism. This “relative space drive” (or RSD) created a pocket field in which the speed of light could be accelerated far beyond normal space, allowing travel to nearby stars and star systems in one tenth of the time.

While remarkable, the Arcadians quickly discovered painful limitations to the technology. While greatly faster than traditional propulsion, on a galactic scale RSD was still painfully slow. It took twenty-seven staryears to take the first colony ship from Arcadia to Nos, for example. In addition, while the pocket of space allowed for a manipulation of the speed of light, it still interacted with physical space. Thus, impact with even the smallest of stellar debris would cause catastrophic damage to any RSD craft.

Arcadian ships would often attempt to counteract this by traveling beyond the elliptic of the systems they traveled to and through, but this only lengthened already strained travel times further.

Fortunately (or unfortunately, depending on the Arcadian), first contact with the Erani was made, and the introduction of quantum fold technology.

### Quantum Folding

Quantum Folding utilizes the theoretical concept behind wormholes, two points in space linked together in subspace just before singularity, creating a shortcut through space and time. Quantum Fold Generators use the elementary force particle called the graviton (a particle with no mass yet a small gravitational force) to create the holes and thus create a temporary wormhole that can allow for a vessel to cross the length of the galaxy in a handful of hours.

That's not to say that the Erani's development of faster than light travel wasn't without its own pitfalls. Originally, quantum fold generators didn't have the sophistication or power to create folds on both ends of the travel. A remote beacon was needed to create the destination point, which limited the effectiveness of early quantum travel.

The beacon had considerable range, up to two light-staryears, in which it could inject the graviton fuel for the destination portion of the fold. Thus, early Erani craft would leapfrog with said beacon across the expanse of space.

Eventually, relay stations were developed which would cut the amount of leapfrogging to merely exploring beyond the boundaries of such relays, but even the relay system was shortlived, and exposed the quirky nature of scientific advancement. The large exploration cruiser Endeavor, while travelling to set up a relay near the Galactic Rim at the boundary of Kiro's space, was in route for said mission when the next major breakthrough in quantum technology had been discovered and implemented. By the time the Endeavor reached their destination, they were greeted by four Kiro's cruisers which informed the crew and retrofitted the craft with the latest technology.

### G-Band

G-Band (short for Gorin Band energy, the name of the Arcadian physicist that discovered its existence) is a high frequency band of energy that exists within physical space yet also overlaps beyond it. Erani believe it to be the actual shell of energy the Creator used to sever the physical plane from the metaphysical.

The most significant property of G-Band energy is that it exists partially beyond physical space, and thus has its own set of governing laws that defy the material universe. The most important of these to galactic civilization is that G-Band doesn't have a spacial location, only a temporal one; a stream of G-Band energy can exist at all points in the universe at the same time.

The Erani discovered that they could inject gravitons through G-Band, creating the destination wormhole for quantum folds without the need for beacons or relay points, and truly unlocking galactic travel. Meanwhile, the Arcadians discovered that they do the same for communication transmissions, allowing for near simultaneous communication across the galaxy.

The next big step for all the galactic races is the further potential G-Band has for travel. The energy itself is immensely high, and overwhelms any attempts at containment, thus destroying any physical mass that tries to interact with it, but if a method were to be developed that would allow such matter to access and travel through G-Band, theoretically any place in the *universe* would be a mere snap of the fingers away.