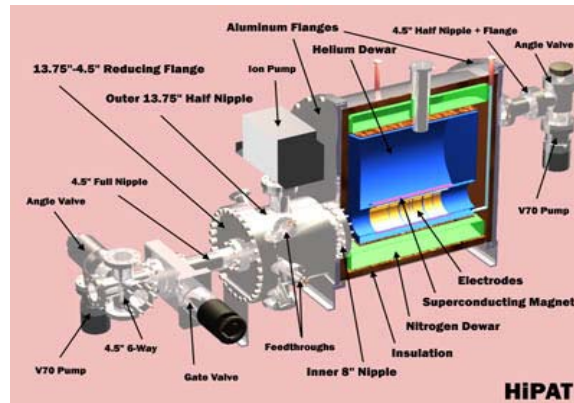


Steven D. Howe, Synergistic Technologies, Inc.

"Enabling Exploration of Deep Space: High Density Storage of Antimatter"

Space is big. Over the next few decades, humanity will strive to send probes farther and farther into space to establish long baselines for interferometry, to visit the Kuiper Belt, to identify the heliopause, or to map the Oort cloud. In order to solve many of the mysteries of the universe or to explore the solar system and beyond, one single technology must be developed – high performance propulsion.



In essence, future missions to deep space will require specific impulses between 50,000 and 200,000 seconds in order to accomplish the mission within the career lifetime of an individual, 40 years. Only two technologies available to mankind offer such performance --fusion and antimatter. Fusion has proven unattainable despite forty years of research and billions of dollars. Antimatter, alternatively, reacts 100% of the time in a well-described manner. Antimatter is produced currently in the world at levels above the storage capacity of state-of-the-art Penning Traps. The single key technology that is required to enable the revolutionary concept of antimatter propulsion is safe, reliable, high-density storage. Development of a system capable of storing megajoules per gram will allow highly instrumented platforms to make fast missions to great distances. Such a development will open the universe to humanity. We propose to develop such a system.