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IAF SPACE EXPLORATION SYMPOSIUM (A3)
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DIRECTED ENERGY, MISSION TO A NEARBY STAR SYSTEM

Abstract

The next frontier for humanity is beyond our solar system, embracing interstellar travel, to expand our knowledge of what is beyond our current scope of vision and understanding. This project outlines a Directed Energy mission to the Alpha Centauri star system, our neighboring solar system, as a technological proof of concept and scientific mission. This mission will utilize a laser array to propel a swarm

of miniaturized light sail gram-scaled spacecraft into the interstellar medium at a fraction of the speed of light to travel the 25 trillion miles for a journey of approximately 20 years. During the journey, the scientific payload on the light sails will collect groundbreaking data and upon arrival at the Alpha Centauri system, will continue its scientific mission, to provide humanity with a glimpse of what may await us in space. The miniaturization of the scientific payloads, advancements in material science for the development of space worthy structures, along with incorporating efficient radioisotope thermal generators and autonomous operation systems will facilitate the success of this interstellar mission. An assessment of Alpha Centauri system will be conducted as the swarm of spacecraft reaches its destination and a better understanding of the exoplanets in that system will be the result. The questions will be answered as to if we can find another habitable planet for humanity in another solar system using the ancient methods of travel and exploration, a sail and some wind. We will come full circle in our quest to explore and be the first of its kind, not unlike the early explorers that set sail on the seas to find out what was beyond their scope of vision.