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# FUSION-ENABLED PLASMA PROPULSION FOR ENABLING INTERSTELLAR MISSIONS

**Abstract**

This proposal introduces a disruptive propulsion technology concept that utilizes fusion-enabled plasma propulsion to enable interstellar missions. Fusion-enabled plasma propulsion is a type of advanced propulsion technology that combines the principles of nuclear fusion and plasma thrusters to generate propulsion. The proposed system would use magnetic fields to confine and compress hydrogen isotopes to induce fusion reactions, generating high-energy plasma that is expelled out of a nozzle to provide thrust.

This technology has the potential to enable interstellar missions by providing significantly higher specific impulse than conventional chemical propulsion, enabling higher velocities and shorter travel times. Additionally, the fusion fuel used in this system is abundant and readily available in space, reducing the need for costly and complex refueling operations.

The proposed fusion-enabled plasma propulsion system also has potential applications for in-space propulsion, including high-power electric propulsion for manned and robotic missions to Mars and other destinations in the solar system.

This paper will provide a detailed description of the proposed fusion-enabled plasma propulsion system, including its key components, performance characteristics, and potential applications. The paper will also discuss the technical and engineering challenges associated with developing and implementing this technology, and will explore potential pathways for technology maturation and integration into future space missions.