

SPACE PROPULSION SYMPOSIUM (C4)
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SPACE PROPULSION USING KINETIC ENERGY

Abstract

Abstract The velocity achieved by current space propulsion systems for deep space exploration is the limiting factor for human presence. Current space propulsion systems use the decay of chemicals to achieve this velocity. The limiting factor of using chemicals for propulsion is the storage ability of a spacecraft. This decreases the mobility of a spacecraft and human potential.

This paper explores the possible solution for eliminating the necessity of chemical storage by using kinetic energy for space-based propulsion. Physical concepts are used learned in high school and introductory college courses to establish a foundational concept. The possible solution for using kinetic energy for space-based propulsion is explored mathematically in order to move the proposal from inception, to test, to production.

Kinetic energy is the energy derived from motion. This energy can be transferred from one mass to another using momentum. This paper explores the feasibility and the applicability of transferring this energy using angular momentum in a spacecraft. This transference of angular momentum is demonstrated to be repeatable in an enclosed system increasing the velocity of a spacecraft with each transfer. The limitations of this system are the power supply to provide the torque and the continued structural integrity of the spacecraft which is dependent on the amount of momentum transferred.