

Technology Transfer Track Posters

VECTOR - Nuclear Fusion Engine for Rocket Propulsion

The VECTOR Engine is an innovative fusion propulsion system designed for space exploration. It combines Magneto-Inertial Confinement (MIC) and Inertial Confinement Fusion (ICF) with RF cavity resonance to achieve proton-boron-11 (pB11) fusion.

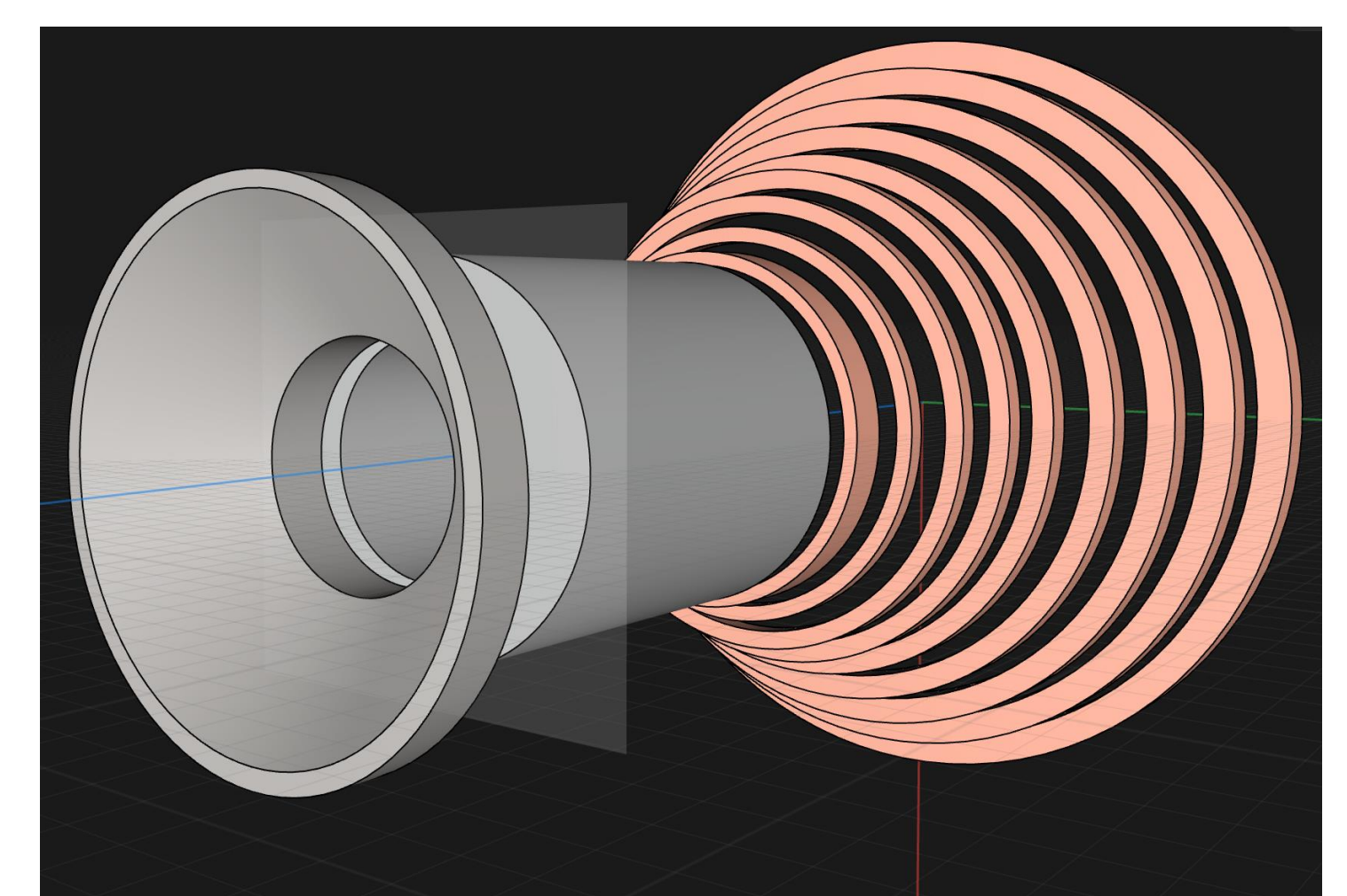
This system enhances propulsion efficiency using Hall Effect Thrusters (HET) and is suitable for deep space missions due to its dual functionality as an energy generator and propulsion system. The VECTOR Engine leverages pB11 fusion known for minimal radioactive waste, making it ideal for long-duration space missions. Its design ensures high performance and durability in the harsh conditions of space.

Benefits of the technology:

- High Energy Efficiency: Minimal fuel requirement
- Safety Advantages: Minimal radioactive waste
- Scalability and Versatility: From small probes to large crewed ships.
- Continuous Operation Capability: Allowing for maneuvers and adjustments throughout the mission duration.
- Cost-Effectiveness
- Lower Lifetime Costs :The high efficiency and reduced fuel needs.
- Reusability across multiple missions

Application Areas:

- Aerospace Companies and Space Agencies specializing in propulsion systems and deep space missions.
- Space Propulsion Systems (Specifically Ion Propulsion Systems made by agencies like the ESA)
- Plasma Modelling & Diagnostics
- Superconductors, MIC, ICF
- Laser research facilities
- RF cavity resonance, RF heating
- Material Research for Space & Fusion
- Plasma Experts, Material Experts, Propulsion Experts



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