



Exodus Propulsion Technologies is a new company founded to commercialize the discovery of its founders: a new type of electrical force related to the coulomb force – dubbed The Exodus Effect – that can be used to provide field-based propulsion of an object without expelling mass out the back.

The company's initial product applications are in space – the first product currently being marketed is already producing a commercially viable level of force for satellite propulsion. The initial product roadmap is focused on in-space propulsion because Exodus can offer a killer application of 'unlimited delta V' to get over the tyranny of the rocket equation, because a spacecraft will no longer need to carry fuel or propellant with Exodus-based propulsion.

EXECUTIVE SUMMARY

- The Exodus Effect is a newly discovered physical force (!!!) generated by the electric fields of charges but separate from the coulomb and magnetic forces.
- It's a very weak force – the Exodus Effect is several orders of magnitude weaker than the coulomb or magnetic forces that can be generated with the same charge input. BUT unlike the coulomb or magnetic forces, which can only generate a net force or movement of an object if there is another separate statically or magnetically interacting object to act on (to push off of or pull toward), the Exodus Effect can move a charged object without another object to act upon – effectively 'pushing' against the vacuum or quantum background.

SCIENCE & TECHNOLOGY

- While The Exodus Effect is a newly discovered or defined effect in physics, it does not require any new physics for the theory of operation. The device operation can be explained and predicted using QED, the accepted dominant theory in physics today.
- Exodus's co-founder, physicist Dr. Charles Buhler, was most recently the head of Electrostatics at Nasa and is the sitting chair of the Electrostatics Society of the Americas, and his experience as one of the world's foremost experts regarding charge effects was invaluable in designing sophisticated experimental procedures that have allowed Exodus to demonstrate success.
- Propellant-less propulsion or field-effect propulsion is enabled via engineering vacuum asymmetry. The Exodus effect has two components - electrostatic pressure force, and divergence in E field force.
- The company's claims are scientifically heretical to some, who say the Exodus Effect violates conservation laws; however, the theory of Exodus operation demonstrates that momentum and energy are conserved, and there are numerous physical precedents accepted to be operating under similar principles; and the company's thousands of experimental results speak for themselves.
- While a scientific theory or physical effect is not patentable, Exodus holds and has continually applied for updated patents for the most effective propulsion device assemblies and other protectable IP. E-field asymmetries can be created via geometries, materials, voltages, and Exodus has patent protection on the configurations it has engineered to be most effective.
- The Exodus Effect can work in air or in vacuum – the performance of its devices today presents a commercially viable value proposition for use in the vacuum of space, but not for use terrestrially in air.
- Commercially viable terrestrial devices are in Exodus's R&D pipeline – they are a matter of engineering and economics, not a question of physical possibility.



- The Exodus Effect has been extensively reproduced by independent experimentalists and Exodus works with scientific and engineering communities to reproduce Exodus Effect devices for non-commercial applications.

APPLICATIONS

- The search for Propellant-less Propulsion is the Holy Grail of the aerospace industry. For over a century, scientists and engineers throughout industry, government and academia have sought this out and have come up empty.
- Exodus has a 'category killer' product offering with unlimited specific impulse. For space exploration, field-based propulsion can overcome the tyranny of the rocket equation.
- Currently, propulsion and fuel systems (running out of fuel) are the rate-limiting factor in spacecraft lifetimes. Additionally, a significant proportion of a craft's weight and size – ~30% for LEO and ~70% for GEO satellites – is made of non-revenue-generating propulsion and fuel systems, driving costs and providing limits on payload usability and mission capability.
- Utilizing the Exodus Effect for spacecraft propulsion will allow for greatly extended lifetimes with unlimited propulsion lifespan, and enhanced usefulness by dedicating a far greater percentage of mass toward mission purposes.
- *This will completely change the economics of the space business – greatly lowering the cost of in-space activity and therefore driving a rapid expansion of space capabilities and industry demand.*
- Exodus devices are capable today of providing drop-in replacements for traditional ion or chemical maneuvering thrusters used on telecommunications satellites, with enhanced performance for in-orbit satellite tasks such as station keeping and repositioning, offering unrestricted maneuvering with **unlimited ISP and unlimited delta V**.
- Exodus thrusters enable new commercial opportunities such as on-orbit delivery, second life for fuel-exhausted satellites, end-of-life de-orbit services, space tug, debris cleanup, and prolonged crew missions.
- For National Security, Exodus can offer superior freedom of action, survivability, and resilience in space; enabling killer applications such as: sustained VLEO (high drag) orbit flight with enhanced imagery at 150 miles; frequent re-tasking of ISR (intelligence surveillance reconnaissance) satellites; antisatellite weapon avoidance; and fast transit to GEO and sustained on-call operation in GEO for superior space situational awareness.
- The current generation of Exodus device technology can scale to space exploration – with continuous acceleration under the 0.38g projected vehicle performance, safe travel time to the Moon drops to under 6 hours and time to Mars drops to 3-7 days.

BUSINESS OUTLOOK

- Exodus is engaged in discussions with potential customers working towards in-space testing of production ready devices in partnership with customers.
 - Exodus's next generation R&D is underway with the objective of improving performance metrics by an order of magnitude, which could enable deep space, terrestrial and/or energy applications.
 - Granted its first US patent in 2022, Exodus aims to remain at the forefront of what is achievable using the Exodus Effect with its intellectual property portfolio.
-