



A New Paradigm:

# CubeSat Electric-Gravitic Propulsion

Orbital Transport Vehicles & Space Platforms

Presented by

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# *Electric-Gravitic Propulsion*

## *A Brief History*

- **Pre-WWII Pioneer:** Nikola Tesla's Wireless RF Power & Intelligent Control of Aircraft and Sea Vessels; circa 1898.
- **WW-II Nazi Germany Technology:** Jets, V2 Rockets, Saucer & Triangular aircraft, and exotic Powerplant designs.
- **USA - Cold War Years:** Project Winterhaven; Thomas Townsend Brown and Dr. Biefeld Bahnson (circa 1958-68).
- **Post-WWII Space Race:** Dr. Strughlinger & Werner Von Braun; USA/NASA, and Richard Miethe (Avrocar); Canada.
- **New Millennium:** NASA/JPL; Arc-Jet, MHD, Ion Propulsion.

# *The Problem*



CubeSat Liquid & Solid chemical propellant-based propulsion system disadvantages:

- Prohibited from use on Military & Commercial Rocket Launch Vehicles.
- Prohibited from use on Amateur Radio High Altitude Balloon (ARHAB) Launch Vehicles per FAA FAR 100D Regulation.
- Finite limited impulse capacity: reduced in-orbit CubeSat translation, stabilization, and altitude correction maneuvers.
- Volatile chemicals increase risk of mission failure.

# *Electric-Gravitic Propulsion*

## *The Solution*



- **FUELESS:** FAA FAR 100D Compliant; NO highly volatile or explosive liquid or solid rocket ordnance propellants.
- **SAFER:** to handle, store & transport - eliminates launch pad hazardous chemical risks and environmental concerns.
- **CHEAPER COTS PARTS:** readable available - shorter lead times, and overall reduction in size, weight and MFR cost.
- **REUSABLE, SCALABLE, MODULAR** integrated propulsion system (IPS); supports RLV and/or in-orbit FFMP station.
- **FLEXIBLE:** CalPoly P-POD; Rocket & Balloon Launchable.


# *Electric-Gravitic Propulsion*

## *The Biefeld-Brown Effect:*

- Produces sufficient counterbary levitation; lift and thrust to defy the force of Gravity.
- Produces an anomalous Newtonian-type force which appears to be equal and nearly exponentially opposite the force of Gravity, thus demonstrating *Antigravity* propulsion.
- Can be used in either atmospheric (air) or deep space vacuum environments.
- Is further enhanced by "Ion wind", but in itself can not account for the total resultant BBE force produced.

# *CubeSat Electric-Gravitic Propulsion*

## *The Benefits:*



### **MOTIONLESS ELECTRICAL APPARATUS:**

- NO moving parts or mechanism required for propulsion.
- DOES NOT use propellers, jets, turbo-jets, turbo-fan, ducted-fan/blowers, liquid or solid chemical propellants.
- Increased Reliability: decreased mean-time-between failures (MTBF) and mean-time-between-replacements (MTBR).
- Reduced MTTR (mean-time-to-repair) results in increased system operational availability ( $A_0$ ).
- Easily adaptable to existing and future CubeSat structures.

# *CubeSat Electric-Gravitic Propulsion*

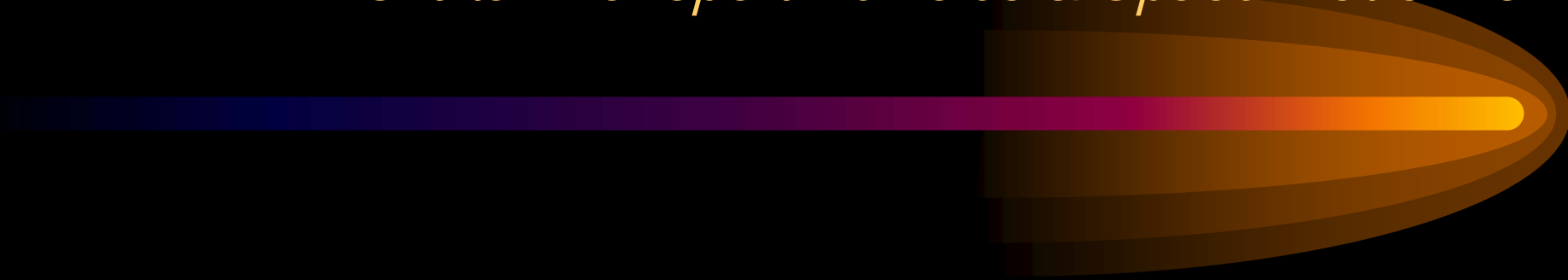
## *The Advantage:*



### **IN-ORBIT 3D MULTI-AXIS IMPULSE** (firing & duration):

- Unlimited vehicle translation maneuvers.
- Unlimited vehicle stabilization maneuvers.
- Unlimited orbital altitude correction maneuvers.
- Extended or sustained orbital flight paths.
- Multi-mission, variable orbital flight path goals.
- Fixed orbital positioning at non-geosynchronous altitudes.

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