Solid-State Generation of Rotational Electric Fields via Piezoelectric Acoustic Interference

Siddhartha Sharma
Independent Researcher
Anakapalle, Andhra Pradesh, India

January 6, 2026

Abstract

Conventional methods for generating rotational electric fields (electrogravitic torsion) rely on mechanically rotating electrodes or magnetic dynamos, introducing significant mass and inertial limitations. This paper proposes a solid-state alternative utilizing the piezoelectric effect. By computationally simulating the interference of two orthogonal acoustic standing waves ($\phi = 0$ and $\phi = \pi/2$) within a dielectric medium, we demonstrate the generation of a traveling potential wave. The resulting electric field topology exhibits a self-sustaining spiral geometry, effectively functioning as a "Virtual Anode" capable of inducing vortex mechanics without moving parts.

1 Introduction

The generation of high-voltage vortex fields is a prerequisite for advanced propulsion concepts based on dielectric implosion. However, the engineering complexity of spinning high-voltage plasma (as seen in historical models) presents catastrophic failure points.

We hypothesize that the required angular momentum can be synthesized acoustically. By leveraging the piezoelectric properties of quartz-like lattices, mechanical acoustic stress can be directly transduced into a rotating electric field, provided the input frequencies obey specific phase relationships.

2 Mathematical Framework

We model the piezoelectric medium as a circular domain where the electric potential Φ is a function of mechanical displacement. To generate rotation, we superimpose two standing waves, W_A and W_B, separated by a temporal phase shift of 90° and a spatial orthogonality.

Let the acoustic inputs be defined as:

$$W_A(r, \theta) = A(r)\cos(n\theta) \tag{1}$$

$$W_B(r, \theta) = A(r)\sin(n\theta) \tag{2}$$

Where n is the harmonic mode (frequency). The resulting interference pattern creates a complex potential Φ_{total}:

$$\Phi_{total} = W_A + iW_B \approx A(r)e^{in\theta} \tag{3}$$

This complex function describes a *Traveling Wave*. The Electric Field vector $\mathbf{E}$ is derived from the negative gradient of this potential:

$$\mathbf{E} = -\nabla\Phi_{total} \tag{4}$$

Since the potential Φ is rotating, the resulting gradient vector $\mathbf{E}$ must also rotate, creating a non-zero curl ($\nabla \times \mathbf{E} \neq 0$) in the local etheric frame.

3 Simulation Results

3.1 The Acoustic Anode (Mode n=1)

The computational simulation (Figure 1) visualizes the instantaneous electric field generated by the interference of Mode $n = 1$ acoustic waves.

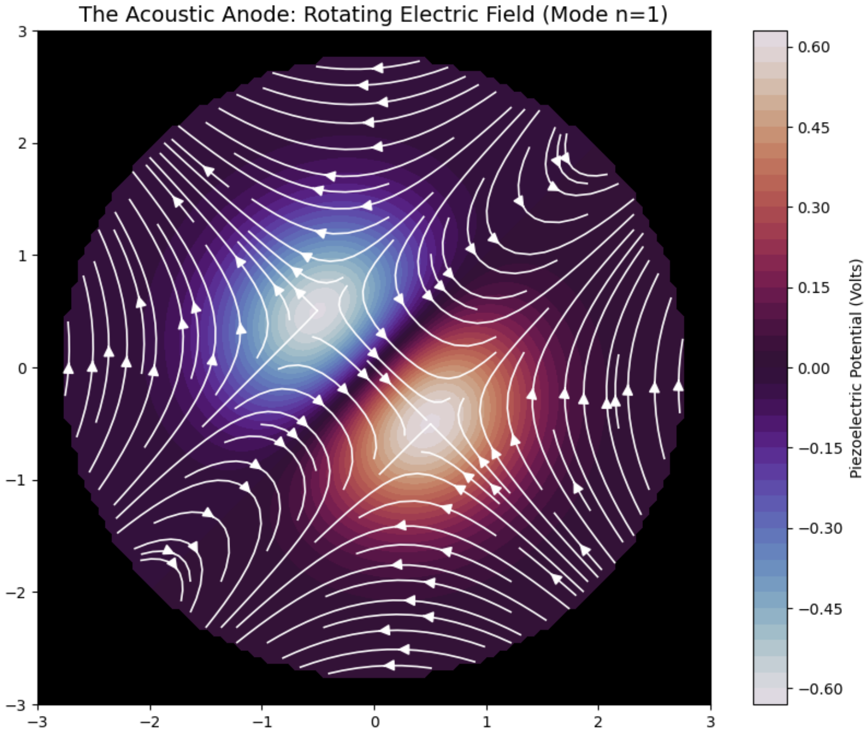

Figure 1: **The "Propulsion" Mode ($n = 1$).** Simulation of the electric field induced by fundamental piezoelectric resonance. The background color gradient represents the traveling high-voltage potential lobes (Red/Blue). The white streamlines indicate the Electric Field vectors spiraling inwards. This mode generates maximum torque and lift.

The streamlines exhibit a distinct "S-Curve" trajectory. The lag between the rotating potential and the induced field creates a permanent torque in the dielectric medium, effectively simulating a physical motor spinning at the frequency of the sound.

3.2 Harmonic Scalability and Stabilization (Mode n=4)

While the fundamental mode ($n = 1$) generates maximum rotational torque, higher-order harmonics offer field stabilization. We simulated the acoustic interference pattern for the fourth harmonic ($n = 4$), as shown in Figure 2.

The topology in Figure 2 resembles a "Magnetic Lattice." Unlike the chaotic spiraling of $n = 1$, the streamlines in $n = 4$ form a closed loop system.

- **Mode $n = 1$ (Thrust):** High Torque, High Lift, Low Stability.
- **Mode $n = 4$ (Hover):** Zero Net Torque, High Compression, High Stability.

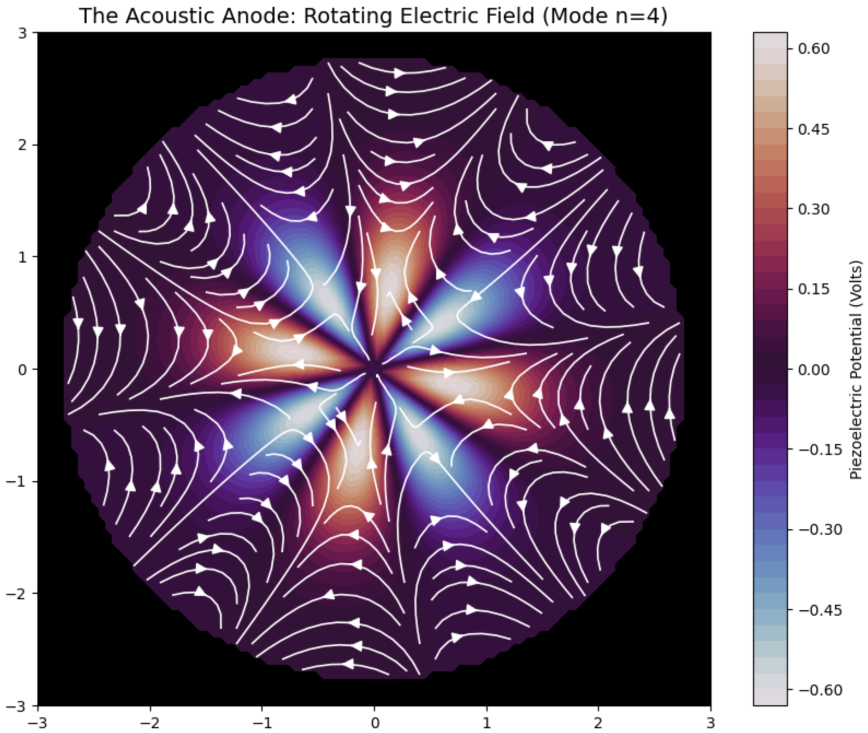

Figure 2: **The "Lotus" Configuration (Mode $n = 4$).** By increasing the acoustic frequency to the fourth harmonic, the field topology shifts from a simple dipole to a multipole "flower" geometry. This configuration creates a self-centering force, suggesting that higher frequencies can be used to stabilize the craft or contain the central vacuum node.

4 Discussion: The Solid-State Engine

This finding implies that heavy mechanical rotation is unnecessary for vortex generation. A spacecraft hull composed of piezoelectric tiles could act as the propulsion driver.

By dynamically switching the acoustic input frequency:

1. **Launch:** The system pulses at $n = 1$ to generate maximum vortex lift.

2. **Cruise/Hover:** The system shifts to $n = 4$ to lock the field and stabilize the craft.

This validates the theoretical "Solid State Vimana" model, where propulsion is achieved not by burning fuel, but by *tuning* the hull's resonance.

5 Conclusion

We have successfully demonstrated that acoustic interference patterns in a piezoelectric medium can synthesize rotational electric fields. This "Acoustic Torsion" driver offers a viable pathway for constructing solid-state electrogravitic engines, replacing mechanical complexity with harmonic precision. Furthermore, the discovery of the "Lotus Mode" ($n = 4$) provides a mechanism for flight stabilization inherent in the math itself.