

# Vortex Formation in the Wake of Dark Matter Propulsion

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**Abstract.** Future spaceflight will require a new theory of propulsion; specifically one that does not require mass ejection. A new theory is proposed that uses the general view that closed currents pervade the entire universe and, in particular, there is a cosmic mechanism to expel matter to large astronomical distances involving vortex currents as seen with blazars and blackholes. At the terrestrial level, force producing vortices have been related to the motion of wings (*e.g.*, birds, duck paddles, fish's tail). In this paper, vortex structures are shown to exist aft of a spaceship using the density excitation method per the modified Chameleon model. This vortex structure is then shown to have similarities to spacetime models as Warp-Drive and wormholes, giving rise to the natural extension of Hawking and Unruh radiation, which provides the propulsive method for space travel where *virtual electron-positron pairs*, absorbed by the gravitational expansion forward of the spaceship emerge from an annular vortex field aft of the spaceship *as real particles*, in-like to propellant mass ejection in conventional rocket theory.

**Keywords:** Electromagnetism, Optics, Acoustics, Heat Transfer, Classical Mechanics, Fluid Dynamics, Other Topics in General Theory of Fields and Particles, Electromagnetic Processes and Properties, Electrokinetic Effects, Magnetohydrodynamics and Electrohydrodynamics

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